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Teacher Working Conditions and Dissatisfaction Before and During the COVID-19 Pandemic

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With a goal of contextualizing teacher job dissatisfaction during the first full school year of the COVID-19 pandemic, we contrast teachers' experiences to the decade and a half leading up to the pandemic. We draw on nationally representative data from the Schools and Staffing Survey and National Teacher and Principal Survey from the 2003-04 to 2020-21 school years. Through descriptive and regression analysis, we show that (1) teacher dissatisfaction has gradually been increasing over time, but did not decrease sharply in the 2020-21 school year, (2) levels of dissatisfaction during the pandemic were not equal across subpopulations of teachers or over time, and (3) positive working conditions consistently predicted lower job dissatisfaction, including in the 2020-21 school year.

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Teacher Working Conditions and Dissatisfaction Before and During the COVID-19 Pandemic

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Abstract

With a goal of contextualizing teacher job dissatisfaction during the first full school year of the COVID-19 pandemic, we contrast teachers' experiences to the decade and a half leading up to the pandemic. We draw on nationally representative data from the Schools and Staffing Survey and National Teacher and Principal Survey from the 2003-04 to 2020-21 school years. Through descriptive and regression analysis, we show that (1) teacher dissatisfaction has gradually been increasing over time, but did not decrease sharply in the 2020-21 school year, (2) levels of dissatisfaction during the pandemic were not equal across subpopulations of teachers or over time, and (3) positive working conditions consistently predicted lower job dissatisfaction, including in the 2020-21 school year.

Keywords: Teacher job attitudes; teacher working conditions; education policy; teacher policy

Considerable societal expectations were placed on public school teachers during the first two school years of the COVID-19 pandemic. Teachers were expected to ensure instructional continuity in a period of unprecedented health, economic, and societal disruption. These initial disruptions—and how they were sustained into the 2020-21 school year—have been linked to worse teacher job attitudes (Kraft & Lyon, 2022; Steiner & Woo, 2021; Steiner et al., 2022). Though the pandemic brought new job demands for all teachers (i.e., negotiating new instructional models), different groups had differing job and personal resources to negotiate the considerable uncertainty of pandemic schooling. As the pandemic disproportionately affected some people more than others—often bringing to light and exacerbating existing structural disparities related to race, class, gender, age, and disability—differences in teacher job attitudes were often markedly different along these and other social categories. For other teachers, the presence of a supportive working environment, such as supportive colleagues, could have helped teachers to weather the challenges of teaching during the pandemic (Steiner et al., 2023).

This study builds on timely studies examining teacher job attitudes during the first year and a half of the pandemic (Mahmood et al., 2023; Sokal et al., 2020). To contextualize the nature of teacher job dissatisfaction during the 2020-21 school year, we contrast teachers' experiences to the decade and a half leading up to the pandemic. We draw on nationally representative data from the Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS) from the 2003-04 to 2020-21 school years. In addition to allowing for historical analyses, these data (1) enable careful probing of how teachers' job dissatisfaction varied by teacher and school characteristics and (2) help us to examine the importance of positive working conditions and teacher dissatisfaction, including during the unique job demands during the 2020-21 school year. This analysis is oriented around the following research

questions: To what extent are teacher background characteristics, school characteristics, and teacher's working conditions associated with teacher dissatisfaction in the 2020-21 school year? How did these relationships differ from years prior to the pandemic?

Our results contribute to the emergent findings around teacher job attitudes during the first couple years of pandemic. We document a large increase in teacher dissatisfaction for young, female teachers during the 2020-21 school year. For other subpopulations of teachers, however, their job dissatisfaction was no different than before the pandemic (e.g., novice teachers). Finally, our study points to new patterns in teacher job attitudes that have yet to be identified. Though working conditions deteriorated in all schools, teachers in lower-poverty schools who were not accustomed to challenging working conditions night have more strongly affected by the new job demands brought about by the pandemic and those were more dissatisfied with teaching compared to teachers in higher-poverty schools.

Teacher Dissatisfaction in the Wake of the COVID-19 Pandemic

By most measures, teacher dissatisfaction was already increasing prior to the pandemic, but reached thirty-year lows during the first two years of the pandemic (Kraft & Lyons, 2022). Though psychological distress decreased during the early months of the pandemic, for many adults it returned to pre-pandemic levels several months later (Aknin et al., 2022). For many teachers, however, work-related stressors continued to manifest themselves beyond initial school closures in spring 2020. In January 2021, teachers were nearly twice as likely to report frequent job-related stress as other adults (78% versus 40%) and nearly three times as likely to report symptoms of depression (27% versus 10%; Steiner & Woo, 2021).

Variations in Teacher Job Attitudes by Teacher Characteristics

Data from RAND's American Teacher Panel shows teachers' distress was higher for particular subpopulations of teachers, including women, younger and novice teachers, and teachers of color (Steiner et al., 2022). Seventy-eight percent of female teachers reported frequent job-related stress compared to 59% of male teachers, a difference the authors attribute to simultaneous caregiving and work-related responsibilities.

Teaching experience and age may have also shaped teacher job dissatisfaction during the pandemic. Unlike more experienced teachers, novice teachers would have been less likely to have a breadth of pedagogical skills to navigate the new and constantly shifting instructional demands of the pandemic (Mecham et al., 2021). Younger teachers may have lacked robust teacher support networks that could reduce feelings of isolation and dissatisfaction at work. Consistent with this expectation, Steiner and Woo (2021) showed frequent job-related stress and depressive symptoms were lower among teachers who were 50 years or older (compared to younger teachers) and teachers with 11 years of experience or more (compared to less experienced teachers), though these differences tended to not be statistically significant. For some older teachers, particularly those teaching in-person, the health risks associated with contracting COVID-19 may have been an added source of work-related stress.

There are also reasons to expect teachers of color were likely to have been more dissatisfied than White teachers—a continuation of a longstanding and especially acute trend for Black teachers (Olsen & Huang, 2018; Sun, 2018). The term *dual pandemics* provides a useful shorthand to delineate how systemic privileges contributed not only to health disparities that put people of color at greater risk from exposure to and harm from COVID-19 (Jones, 2021; Wegemer & Keyserlingk, 2022), but broader racial injustices experienced by people of color. As school systems throughout the country wrestled with their own role in exacerbating racial

inequalities following George Floyd's murder and ensuing Black Lives Matter protests, race was arguably much more salient in school operations than ever before. Yet, the survey studies by Steiner and colleagues (2022) give little consistent indication that teachers of color were more dissatisfied than White teachers in the 2020-21 school year.

Given the role of teachers' multiple identities in shaping their job dissatisfaction, the levels of dissatisfaction were likely highest for some intersecting identity groups. The clearest example of this is for young female teachers. During the early phase of the pandemic, younger women carried out a disproportionate share of domestic and care work and (2) more time on these tasks was associated with worse overall well-being (Giurge et al., 2021).

Variation in Teacher Job Attitudes by School Characteristics

Teacher dissatisfaction likely also depended on school characteristics, many of which were intertwined with decisions about the appropriate instructional model for the 2020-21 school year. At the start of the year, data from the Center for Reinventing Public Education showed 13% of rural districts were fully remote compared to 34% of suburban districts and close to 80% of urban school districts (Camera, 2020). These sharp differences by urbanicity resulted from a range of factors, including those related to the physical infrastructure (e.g., urban schools had less flexibility in adopting social distancing guidelines), resource disparities (e.g., less access to high-speed internet made virtual learning less feasible in some rural areas), COVID-19 transmission levels, and local political considerations (Diemer & Park, 2022; Schwartz et al., 2021; Singer et al., 2023). Differences in instructional modality could have contributed to lower levels of teacher dissatisfaction in rural schools.

The relationship between school poverty levels and the racial/ethnic composition of the student body and teacher dissatisfaction during the pandemic is less clear. On the one hand,

schools with more concentrated student poverty and more students of color have, on average, more challenging working conditions, and teachers in these schools tend to be slightly less satisfied (Grissom, 2011; Johnson et al., 2012). Despite the new work demands brought about by the pandemic, the historically elevated dissatisfaction rates in higher-poverty and majority-minority schools might have persisted into the 2020-21 school year. On the other hand, given that working conditions deteriorated in all schools, teachers in lower-poverty schools who were not accustomed to challenging working conditions night have more strongly affected by the new job demands brought about by the pandemic. Thus, it may actually be that pandemic-related disruptions in schools narrowed feelings of dissatisfaction between teachers working in higher- and lower-poverty schools.

Similar to how teachers' multiple identities differentially shaped their experiences with the pandemic, the association between these different school conditions could have an interactive relationship with teacher dissatisfaction. Rurality and poverty intersected in unique ways during the pandemic. High-poverty rural schools often faced acute student needs but inadequate resources. Diemer and Park's (2022) study of school reopening in Missouri found 86% of high-poverty urban and suburban districts provided food access compared to 49% of high-poverty rural districts. Teachers working in particular schools might have had elevated dissatisfaction. For instance, young teachers in urban schools—schools that, on average, re-opened for in-person learning the latest in the 2020-21 school year—may have faced higher levels of isolation which resulted in increased dissatisfaction levels.

Positive Working Conditions and Teacher Dissatisfaction

Positive working conditions could have lessened the detrimental impact of pandemic-related disruptions on teachers' job dissatisfaction. An extensive literature before the pandemic

attests to the importance of positive working conditions in managing the demands of teaching (Merrill, 2021). The salience of positive working conditions for teachers was also evident in the early phase of the pandemic (Kraft et al., 2022). Though teacher working conditions are inclusive of administrative support, teacher collegiality, resource availability, teacher autonomy, and workload, among others (Merrill, 2021), we focus on these first three constructs that are plausibly related to how teachers' weathered pandemic-related disruptions within their school and are available longitudinally in the SASS/NTPS data.

The unique role filled by school principals, one in which they are both responsible for managing the day-to-day affairs of a school and the instructional climate (Grissom et al., 2021), positioned them at the forefront of the central challenges faced by teachers during the pandemic. Managerially, this included ensuring adequate staffing among teachers and support staff and, for schools with any in-person instruction, ensuring safety protocols were consistently being followed throughout the school. For many principals, these and other managerial job duties eclipsed their instructional leadership at a time when teachers faced unique challenges in negotiating varied and sometimes changing modes of instruction while also attending to student well-being and behavior concerns (Steiner et al., 2022). Their frontline role in enacting various school and district policies could have strengthened the relationship between administrator support and teacher dissatisfaction, a view supported by evidence from RAND's American Teacher Panel (Steiner & Woo, 2021).

Teacher cooperation was likely also strained during the 2020-21 school year. For teachers working online, communication with colleagues was limited by time constraints (Jones et al., 2022). Even for those teaching in person or hybrid, social distancing protocols could have limited the degree to which teachers were able to connect with one another—exacerbating

feelings of isolation. Moreover, the precarity of school staffing often left teachers covering for one another (Steiner et al., 2022), possibly straining collegial relationships in the process. In some instance, teachers might have actually experienced more cooperation. A dearth of district supports could have led teachers to rely more on their colleagues for instructional support. Though it is unclear whether teachers-reported level of cooperation with their colleagues increased or decreased during the pandemic, we expect to find a consistently negative relationship between teacher cooperation and teacher dissatisfaction.

Data

Our data come from the Schools and Staffing Survey (SASS) and its newest iteration, the National Teacher and Principal Survey (NTPS), administered by the National Center for Educational Statistics (NCES). SASS/NTPS consist of nationally representative samples of public schools, principals, and teachers, and they include about 30,000 teachers every wave. SASS was conducted every three to four years, and the NTPS every two to three years. Specifically, we use the 2003-2004, 2007-2008, 2011-2012, 2015-2016, and 2020-2021 SASS/NTPS waves. This constitutes the most comprehensive national data on teacher characteristics, school characteristics, and teacher dissatisfaction over time.

Data on teacher and school characteristics are available for all waves, and overall, missing data are less than 1% of the available observations. Due to nature of NTPS rotating survey modules every other wave, we do not have teacher working conditions for the 2017-2018 wave. Otherwise, we have all the key variables needed for analysis. The overall sample size is over 164,000 unique teacher-year observations.

Measures of Teacher Dissatisfaction

Appendix Table 1 provides descriptions of the study variables. The dependent variable is constructed using exploratory factor analysis of eight Likert-scale questions about teacher dissatisfaction. These dissatisfaction questions include whether teachers think teaching is worth their time, lack of enthusiasm for teaching, whether they think about staying home from school because they are too tired to go, how satisfied teachers are at school (reverse coded), whether they like how things are run at the school (reverse coded), whether they would leave teaching for better pay, whether they think about transferring to another school, and how they are satisfied with their salary (reverse coded). Scree plot and eigenvalues strongly suggest a single factor (Appendix Figure 1). Factor loadings, Cronbach alphas and factor score indeterminacy results suggest the validity of our dissatisfaction factor, particularly for exploratory factors (Appendix Table 2; Beauducel, 2011; Santos, 1999; Tavakol & Dennick, 2011). As the questions contributing to this dissatisfaction factor are Likert-scale ranging from 0-3 (rescale from 1-4), for ease of interpretability we choose to keep this scale for the factor and not standardized the result. The range of this factor then is from 0-3 with higher values indicating more dissatisfaction. Results are substantively similar when we standardize the factor.

Measures of Teacher and School Characteristics, and Teacher Working Conditions

We include a number of teacher demographics, specifically gender, race/ethnicity (White, Black, Hispanic, Asian, American Indian), and age, as well as teacher characteristics and qualifications, such as being a novice teacher, having graduate degree(s), being uncertified, salary, and union membership. In terms of school characteristics, we include the urbanicity of the school, student enrollment size, whether it was an elementary, secondary or combined secondary and elementary level, and indicators of whether the majority of students were eligible for free- of reduced-price lunch or students of color. Lastly, under teacher working conditions, we include

levels of administrative support, teacher cooperation, and teacher report of having adequate materials.

Measures of Pandemic Conditions

We include three measures of pandemic conditions in auxiliary analyses. These data came from the COVID-19 School Data Hub (2023). The first measure is the average case rate of COVID per 100,000 people at the district level in the 2020-2021 school year. The second and third measures are school-level measures of whether the school was in person, hybrid, or virtual at the start and end of the school year respectively (only available for 38 states). Due to the limited availability of these data, we include them only as a sensitivity check.

Methods

Our analysis consists of three main parts. First, we construct the teacher dissatisfaction variable using factor analysis, and examine how it varies over time. Then we examine the relationships between teacher characteristics, school characteristics, and working conditions with teacher dissatisfaction. Our main model is as follows.

$$Dissatisfaction_{ijt} = \beta_0 + \boldsymbol{T}_i\beta_1 + \boldsymbol{S}_j\beta_2 + \boldsymbol{WorkCond}_i\beta_3 + \gamma_s + \delta_t + e_{ijt} \quad (1)$$

Dissatisfaction is the constructed factor for teacher *i* from school *j* in year *t*. T_i is a vector of teacher characteristics, S_j is a vector of school characteristics, and $WorkCond_i$ is a vector consisting of administrative support, teacher cooperation, and adequate materials, γ_s is a state fixed effect, and e_{ijt} is the error term. We employ state fixed effects to account for unobserved heterogeneity across states. We run this model for every year to examine the predictors of dissatisfaction and how they may have changed over time. This is particularly salient for the 2020-21 school year, the first full school year during the COVID-19 pandemic. We also employ a pooled model where we use all the available data and we include year fixed effects to account

for time-specific heterogeneity such as the 2007-08 Recession or the pandemic. Our pooled model essentially allows us to examine which teacher and school characteristics and working conditions are associated with increased or decreased levels of teacher dissatisfaction while accounting for unobserved differences among states and secular trends.

Third, we examine whether there is a differential relationship for specific teacher and school characteristics in the 2020-21 school year by adding in interaction terms. Our interaction model enables us to examine whether these relationships may have differential effects during the pandemic. In all models, we employ appropriate weights to make the results nationally representative. Heteroskedastic-robust standard errors are clustered at the state level.

Results

Table 1 provides nationally representative descriptive statistics of teacher characteristics, school characteristics, teacher working conditions, and the components of teacher dissatisfaction over time. Overall, most variables are fairly stable over time (Panel A). In terms of teacher working conditions (Panel B), on average, teachers report they agree that administration is supportive, that teachers cooperate with each other, and that they have adequate materials for teaching. In Panel C we report the mean of teacher reports on the eight individual components of the dissatisfaction factor. On average, the mean is around a 1, which means that teachers generally report they disagree that they are dissatisfied as measured by the eight components. When we examine the dissatisfaction factor over time (Figure 1), we observe there is a general shift in the distribution of teacher dissatisfaction. Specifically, overall teachers are reporting more dissatisfaction from 2004 to 2021, particularly around the 2015-16 school year. When we examine the proportion of teachers whose dissatisfaction score is 1.5 or above (1.5 being the midpoint on a scale of 0-3, which represents more dissatisfied than satisfied), 21 percent of

teachers are more dissatisfied than satisfied in 2004 relative to 25 percent in 2012 and 29 percent in 2016 or 2021. Generally, these descriptive results suggest teachers have become more dissatisfied over time, particularly since 2016, but not a sharp decrease in 2020-21 with this measure.

In Table 2, we examine how teacher characteristics, school characteristics, and teacher working conditions are associated with teacher dissatisfaction over time. We note the first five columns show the results by each specific year, then all years combined without the 2021 wave, and then all years including the 2021 wave. Due to space limitation, we focus on the last four models while briefly discussing the key findings from the others. In general, we observe dissatisfaction is elevated among racially minoritized teachers (in reference to White teachers), teachers in economically disadvantaged schools or majority minority schools (in reference to less affluent or less racially concentrated schools, respectively), and younger teachers (in reference to older teachers) and novice teachers are less dissatisfied than veteran teachers (Model 7).

While many teacher and school characteristics are associated with teacher dissatisfaction, some of these relationships do change over time. On the other hand, the relationships among teacher working conditions and dissatisfaction are consistent and stable over time. For instance, *ceteris paribus*, increases in administrative support are consistently associated with decreases in teacher dissatisfaction (the range of decrease is from 0.218 to 0.284 unit, or a decrease of 0.343 to 0.447 standard deviations). Similarly, a one-unit increase in teacher cooperation (going from Agree to Strongly Agree, for instance) is associated with a decrease of 0.174 unit in dissatisfaction (Model 7) and likewise, a decrease of 0.113 unit in dissatisfaction for adequate materials. These results suggest that, teacher working conditions, at least as measured by administrative support, teacher cooperation, and having adequate materials, consistently matter

for how dissatisfied teachers feel, and this relationship does not seem to have changed during the pandemic.

For some groups of teachers (e.g., novice teachers), it appears the relatively higher levels of dissatisfaction in 2021 mirror pre-pandemic trends. For other groups of teachers, however, dissatisfaction was higher during the pandemic. Comparing the results between models 5 and 6, we see female teachers and younger teachers may have been more dissatisfied during the 2021 school year relative to prior years. Surprisingly, teachers in higher-poverty schools or majority-minority schools were less dissatisfied in 2021 than in prior years. A formal moderation analysis in Models 8 and 9 of Table 2 shows that these differences were significantly different. Specifically, the moderation analysis also indicates a differential relationship for teachers working in rural schools, majority-minority schools, and schools with more concentrated poverty and teacher dissatisfaction in the 2021 school year.

With the results in Table 2 suggesting the pandemic had differential associations with dissatisfaction depending on teacher characteristics (e.g., age, gender, and race/ethnicity) as well as school characteristics (e.g., urbanicity, higher-poverty, and majority-minority schools), we further probe the extent to which these relationships vary by teacher and school characteristics through interaction effect analyses. Specifically, we conduct nine separate interaction models, each of which has a triple interaction term consisting of teacher and/or school characteristics and the 2021 wave (e.g., an interaction of young, female, and 2021 wave).

Figure 2 shows the extent to which there is a differential relationship between teacher and school characteristics before and after the onset of the pandemic. First, we observe teachers were generally more dissatisfied during the pandemic than all years prior to the pandemic as average levels of dissatisfaction were lower before 2021 than during 2021. As we noted previously

however, teachers were becoming more dissatisfied starting in 2016. The key question is whether certain teachers were more dissatisfied during the pandemic. From these nine interactions, the only statistically significant finding is that young female teachers were more dissatisfied during the pandemic than before the pandemic.

As a robustness check of these findings, we also conduct subgroup analyses for young teachers (Models 1-4 of Appendix Table 3), comparing the regression results for the pandemic year, for all years prior to the pandemic, a pooled model, and an interaction model with female teachers. Similar to the main findings, the results from Models 1 and 2 suggest younger female teachers were more dissatisfied in 2021 than in previous years. When we test this specifically in Model 4, we find significant evidence supporting this finding. Echoing the previous findings, teacher working conditions are consistently associated with teacher dissatisfaction, before and after the pandemic.

Sensitivity analyses

In our previous analyses, we have examined the extent to which different teachers may have been more dissatisfied during the pandemic by comparing data during and prior to pandemic. It is possible, however, pandemic conditions and teaching conditions, specifically teaching modality, may play a role in these relationships. To examine this possibility, we have included COVID-19 case rate per 100,000 people and learning modality at the start and at the end of the school year for each school in the U.S. as covariates in our models (Appendix Table 4). These results are substantively similar to our main findings. They, by and large, suggest that women, particularly young women, are more dissatisfied during the pandemic year. Moreover, even accounting for pandemic conditions, better teacher working conditions are again

consistently associated with decreased dissatisfaction. In addition, no relationship is observed between case rates or learning modality and teacher job dissatisfaction.

Discussion and Conclusion

This study was designed to complement survey research and teachers' first-person accounts from during the pandemic regarding their job attitudes. Specifically, we add longitudinal perspective on the nature of teachers' job dissatisfaction, how dissatisfaction varied among particular groups of teachers, and the association between working conditions and teacher dissatisfaction. We highlight three key findings to emerge from this work.

First, echoing recent work by Kraft and Lyons (2022), teacher dissatisfaction has gradually been increasing over time, but, with our data, did not decrease sharply in the 2020-21 school year. This shift is clear when looking at teachers whose dissatisfaction score is above the midpoint: 21 percent of teachers are more dissatisfied than satisfied in 2004 relative to 29 percent in 2016 or 2021.

Second, levels of dissatisfaction during the pandemic were not equal across subpopulations of teachers or over time. Novice teachers were more dissatisfied than more experienced teachers during the pandemic, though this difference mirrored pre-pandemic trends. For other groups of teachers, including female teachers and teachers under 30 years old, dissatisfaction levels during the pandemic were higher than the years before the pandemic. We extend this finding in an exploratory analysis by showing that young female teachers were more dissatisfied during the pandemic than before.

In terms of school characteristics, a surprising pattern emerges in terms of teachers in higher-poverty schools or majority-minority schools; teachers in these schools were *less* dissatisfied in 2021 than in prior years. Though teacher dissatisfaction has historically been

elevated in higher-poverty and majority-minority schools, the pandemic brought about new job demands for all teachers. For teachers in lower-poverty schools less accustomed to challenging working conditions, the pandemic seems to have been perceived as more consequential for job dissatisfaction. Teachers in rural schools were also slightly less dissatisfied than before the pandemic.

Third, the relationship between teacher working conditions—including administrative support, teacher cooperation, and access to adequate materials—and dissatisfaction were quite stable over time, including in the 2020-21 school year. The magnitude of these relationships was also quite large. For instance, a one-unit increase in administrative support was associated with a 0.26 unit or 0.41 standard deviation decrease in job dissatisfaction. To put this into perspective, this decrease is nearly twice the average effect that mindfulness-based interventions have on people's mental health (Spijkerman et al., 2016) or comparable average effect from behavioral interventions on psychological well-being (Weiss et al., 2016).

Limitations

This study extends the field's understanding of how disruptions induced by the pandemic shaped teacher dissatisfaction, but the study is not without its limitations. The chief limitation in this study relates to measurement. A tradeoff of using longitudinal data on teacher dissatisfaction and working environments is that the measures used in this study do not pertain specifically to the unique circumstances brought about by the pandemic. For instance, while we can speak to general feelings of administrator support, we cannot speak to how teachers were more or less dissatisfied given their work in overseeing improvements to school facilities or ensuring that health protocols were followed (i.e., masking; social distancing; contact tracing; temperature checks). That said, stability in the factor loadings for the job dissatisfaction measure give us

confidence that we were not measuring distinct job attitudes in the 2020-21 school year. Still, the measure admittedly overlooks important features of teachers work that were uniquely tied to their job attitudes in the midst of the pandemic. It should be noted the 2020-21 NTPS includes questions related to the pandemic, but teachers are asked to report retrospectively on the 2019-20 school year, limiting their utility for the current study.

An even broader concern is that more granular data on teachers' teachers' differential considerations pertaining to teaching modality is unmeasured. Personal and familial health risks could have differentially shaped teachers' preferences for returning to teach in person. Two teachers in our data could be similar on all observed measures in this study, but had sharp differences in job dissatisfaction based on whether or not their return to in-person teaching brought new health risks for them or their family. Relatedly, although we integrated data on instructional modality at the start and end of the 2020-21 school year, we do not observe these data for individual teachers. As there was heterogeneity even with schools, our analysis cannot explicitly link a teachers' instructional modality and job dissatisfaction.

Implications for Research, Practice, and Policy

The arguably two most important findings to emerge from this study—that the level of teacher dissatisfaction was not uniform for all teachers and that positive working conditions consistently predicted lower job dissatisfaction—have important implications for research, practice, and policy.

First, as school districts assess the scope of staffing challenges brought about by the pandemic, considerations will likely need to be made regarding ongoing challenges related to teacher staffing. Though we are unable to study to measure teacher turnover, other data suggests teacher turnover has creeped up after the initial years of the pandemic (Bacher-Hicks et al., 2022;

Camp et al., 2023; Goldhaber & Theobald, 2023). Given that dissatisfaction was elevated for some groups of teachers more than others, it reasons that some teachers will also have left teaching at elevated rates. If, for instance, young female teachers left at elevated rates following the pandemic, a critical question in the upcoming years will be the relative share that re-enter teaching. Though earlier work suggested that many female teachers will temporarily leave teaching and return once their children are older (Grissom & Reininger, 2012), more recent evidence has not supported this pattern (Moyer, 2022). School districts can likely re-engage teachers who left as a possible means to address staffing challenges.

An emerging research consensus attests to the importance of positive working conditions for teacher effectiveness and retention (Kraft & Papay, 2014; Nguyen et al., 2020; Ronfeldt et al., 2015; Simon & Johnson, 2015). That teachers with more supportive administrators, higher levels of cooperation, and greater access to instructional materials were significantly less dissatisfied during the pandemic affirms this finding, even amidst the most challenging working conditions of most teachers' careers. The importance of these localized, school-based supports suggests the need to build a much better understanding of how to foster these conditions. Work has begun to emerge among principals (e.g., Gates et al., 2019; Jacob et al., 2015; Steinberg & Yang, 2022) much more can be done to understand how teachers, principals, and districts can cocreate the school conditions where teachers feel satisfied, well-supported, and want to continue teaching. While there is a large literature on the importance of teacher collaboration (Vangrieken et al., 2015), there is little to no causal work on how to effectively improve teacher collaboration and prioritizing such efforts are critical in the wake of the pandemic.

Teacher shortages that have only become more acute in the wake of the pandemic point to the need to affirm the positive working conditions that can improve teacher satisfaction and

retention. Efforts to address immediate staffing challenges throughout the country should not be divorced from the increased teacher dissatisfaction even before the pandemic. Efforts to improve teacher working conditions will likely need to accompanied with deeper changes into how teachers are supported in the classroom, involved in decision-making, and compensated.

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Tables

Table 1. Descriptive statistics of teacher characteristics, school characteristics, and teacher dissatisfaction

	(1) Year 2004	(2) Year 2008	(3) Year 2012	(4) Year 2016	(5) Year 2021	(6) National pooled
Panel A: Teacher and school characteristics						
Female	0.75	0.76	0.76	0.77	0.77	0.76
Black	0.08	0.07	0.06	0.07	0.06	0.07
Asian	0.02	0.01	0.02	0.03	0.03	0.02
American Indian	0.01	0.01	0.01	0.01	0.02	0.01
Hispanic	0.06	0.07	0.08	0.09	0.08	0.07
White	0.83	0.84	0.83	0.80	0.81	0.83
Under 30	0.17	0.18	0.15	0.15	0.15	0.16
Novice teacher	0.10	0.11	0.07	0.10	0.08	0.9
Graduate degree	0.47	0.50	0.54	0.55	0.59	0.53
Salary per $1,000	55.34	54.29	54.78	54.00	60.14	55.58
Union member	0.77	0.76	0.74	0.69	0.68	0.73
Suburban school	0.53	0.55	0.45	0.51	0.51	0.51
Rural school	0.19	0.20	0.28	0.20	0.24	0.22
School enrollment	796	816	822	818	766	806
Secondary school	0.29	0.31	0.31	0.30	0.28	0.30
Combined elem and sec	0.05	0.04	0.06	0.06	0.08	0.06
Majority FRPL school	0.36	0.36	0.47	0.49	0.55	0.44
Majority minority school	0.34	0.34	0.40	0.47	0.46	0.40
Panel B: Teacher working conditions						
Administrative support	2.34	2.39	2.26	2.31	2.35	2.38
Teacher cooperation	2.21	2.23	2.18	2.19	2.22	2.36
Adequate materials	2.15	2.23	2.15	2.10	2.27	1.04
Panel C: Teacher dissatisfaction and specific component						
Teaching not worth it	0.73	0.71	0.81	0.88	0.87	0.80
Lack of enthusiasm	1.09	1.09	1.20	1.29	1.36	1.21
Too tired to teach	0.77	0.67	0.66	0.79	0.96	0.76
Not satisfied as a group	0.94	0.90	0.99	1.00	0.91	0.95
Not satisfied with how things are run	1.04	0.96	1.05	1.05	0.99	1.02
Look for higher paying job	0.96	0.91	1.00	1.13	1.20	1.04
Look to transfer	0.89	0.83	0.86	0.92	0.87	0.88
Not satisfied with salary	1.70	1.61	1.67	1.73	1.62	1.67
Teacher dissatisfaction	1.01	0.96	1.03	1.10	1.10	1.04
Observations	39380	33880	33970	28390	29160	164780

Note. Nationally-representative weights are employed. Salary is in constant 2021 dollar. Observations have been rounded to the nearest 10 per IES compliance. Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS).

Table 2. Association of teacher characteristics, school characteristics, and working conditions with teacher dissatisfaction

	(1) Year 2004	(2) Year 2008	(3) Year 2012	(4) Year 2016	(5) Year 2021	(6) All years Without 2021	(7) All years	(8) All interactions
Female	-0.033**	-0.020	-0.013	0.020*	0.041**	-0.010+	-0.001	-0.011*
	(0.007)	(0.012)	(0.010)	(0.008)	(0.009)	(0.005)	(0.004)	(0.005)
Black	0.073**	0.050*	0.066*	0.032*	0.053*	0.054**	0.054**	0.060+
	(0.022)	(0.019)	(0.027)	(0.014)	(0.021)	(0.013)	(0.012)	(0.032)
Asian	0.061	0.079+	-0.032	0.054	0.032+	0.036+	0.034*	0.037+
	(0.038)	(0.042)	(0.040)	(0.041)	(0.017)	(0.021)	(0.014)	(0.021)
American Indian	-0.001	0.005	0.037	-0.006	0.050+	0.010	0.018	0.024
	(0.036)	(0.026)	(0.030)	(0.025)	(0.028)	(0.012)	(0.011)	(0.019)
Hispanic	0.003	-0.015	-0.017	-0.042**	0.006	-0.020*	-0.015*	-0.013
	(0.013)	(0.024)	(0.033)	(0.014)	(0.025)	(0.008)	(0.006)	(0.033)
Under 30	0.034**	0.028*	0.026	0.046**	0.088**	0.032**	0.041**	0.027**
	(0.011)	(0.014)	(0.016)	(0.013)	(0.012)	(0.008)	(0.008)	(0.008)
Novice teacher	-0.121**	-0.147**	-0.118**	-0.107**	-0.136**	-0.125**	-0.127**	-0.128**
	(0.012)	(0.021)	(0.012)	(0.012)	(0.018)	(0.009)	(0.009)	(0.009)
Graduate degree	-0.004	0.011	0.034**	0.025**	0.018+	0.019**	0.018**	0.019**
	(0.008)	(0.009)	(0.008)	(0.006)	(0.009)	(0.004)	(0.003)	(0.003)
Salary per $1,000	-0.002**	-0.001**	-0.004**	-0.002**	-0.003**	-0.002**	-0.002**	-0.002**
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Union member	0.012	0.012	0.016	-0.003	-0.003	0.007	0.005	0.006
	(0.010)	(0.019)	(0.025)	(0.012)	(0.013)	(0.014)	(0.013)	(0.013)
Suburban school	-0.030*	-0.029	-0.031	-0.031+	-0.026*	-0.032*	-0.031*	-0.033*
	(0.014)	(0.028)	(0.023)	(0.017)	(0.010)	(0.016)	(0.014)	(0.016)
Rural school	-0.014	0.003	-0.041+	-0.032*	-0.042**	-0.022+	-0.026*	-0.020+
	(0.012)	(0.022)	(0.023)	(0.015)	(0.013)	(0.012)	(0.010)	(0.012)
School enrollment	0.000	-0.000*	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Secondary school	-0.011	0.002	-0.014	-0.041**	-0.039+	-0.018*	-0.023**	-0.020**
	(0.009)	(0.011)	(0.010)	(0.013)	(0.020)	(0.008)	(0.007)	(0.007)
Combined elem and sec	-0.004	0.004	0.027	-0.018	-0.040*	0.003	-0.006	-0.003
	(0.014)	(0.013)	(0.017)	(0.015)	(0.018)	(0.009)	(0.009)	(0.009)
Higher poverty school	0.038*	0.061**	0.024*	0.031**	0.007	0.041**	0.035**	0.041**
	(0.015)	(0.013)	(0.010)	(0.011)	(0.009)	(0.007)	(0.006)	(0.007)
Majority minority school	0.054**	0.047*	0.049**	0.040**	0.017	0.047**	0.040**	0.047**
	(0.016)	(0.021)	(0.012)	(0.015)	(0.012)	(0.009)	(0.007)	(0.009)
Administrative support	-0.218**	-0.281**	-0.256**	-0.262**	-0.284**	-0.254**	-0.260**	-0.260**
	(0.008)	(0.007)	(0.011)	(0.007)	(0.005)	(0.006)	(0.005)	(0.005)
Teacher cooperation	-0.150**	-0.172**	-0.185**	-0.184**	-0.175**	-0.173**	-0.174**	-0.172**
	(0.004)	(0.005)	(0.008)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)
Adequate materials	-0.103**	-0.109**	-0.108**	-0.112**	-0.136**	-0.109**	-0.113**	-0.113**
	(0.007)	(0.006)	(0.007)	(0.004)	(0.006)	(0.003)	(0.003)	(0.003)
2021 Wave # Female								0.052**
								(0.009)
2021 Wave # Young								0.054**
								(0.010)
2021 Wave # Senior								-0.048*
								(0.020)
2021 Wave # Non-white								0.007
								(0.021)
2021 Wave # Suburban school								0.010
								(0.012)
2021 Wave# Rural school								-0.031*
								(0.015)
2021 Wave # Higher poverty								-0.030**
								(0.011)
2021 Wave # Majority min.								-0.032*
								(0.013)
Constant	2.175**	2.335**	2.426**	2.443**	2.605**	2.359**	2.384**	2.383**
	(0.029)	(0.054)	(0.046)	(0.023)	(0.024)	(0.025)	(0.021)	(0.022)
Observations	39380	33880	34000	28390	29160	135620	164780	164780

Note. Nationally-representative weights are employed. Heteroskedastic-robust standard errors clustered at the state level are in parentheses. All models include state fixed effects, and the pooled models (Models 7 and 8) include wave fixed effects. Observations have been rounded to the nearest 10 per IES compliance. Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS). $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Figures

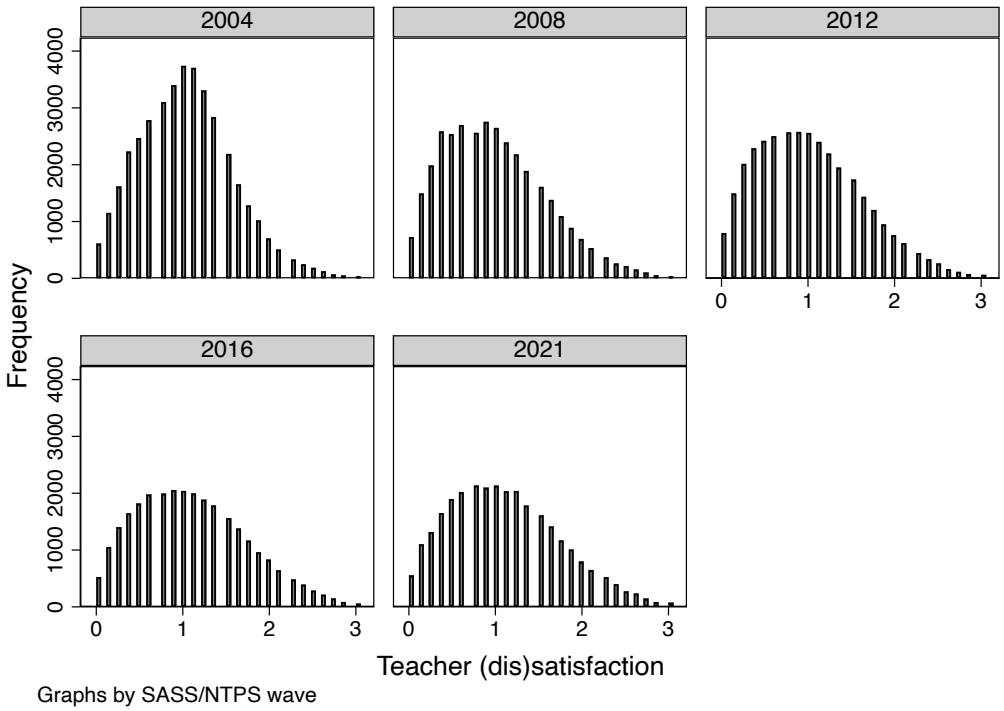

Figure 1. Teacher dissatisfaction factor over time
Note: Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS).

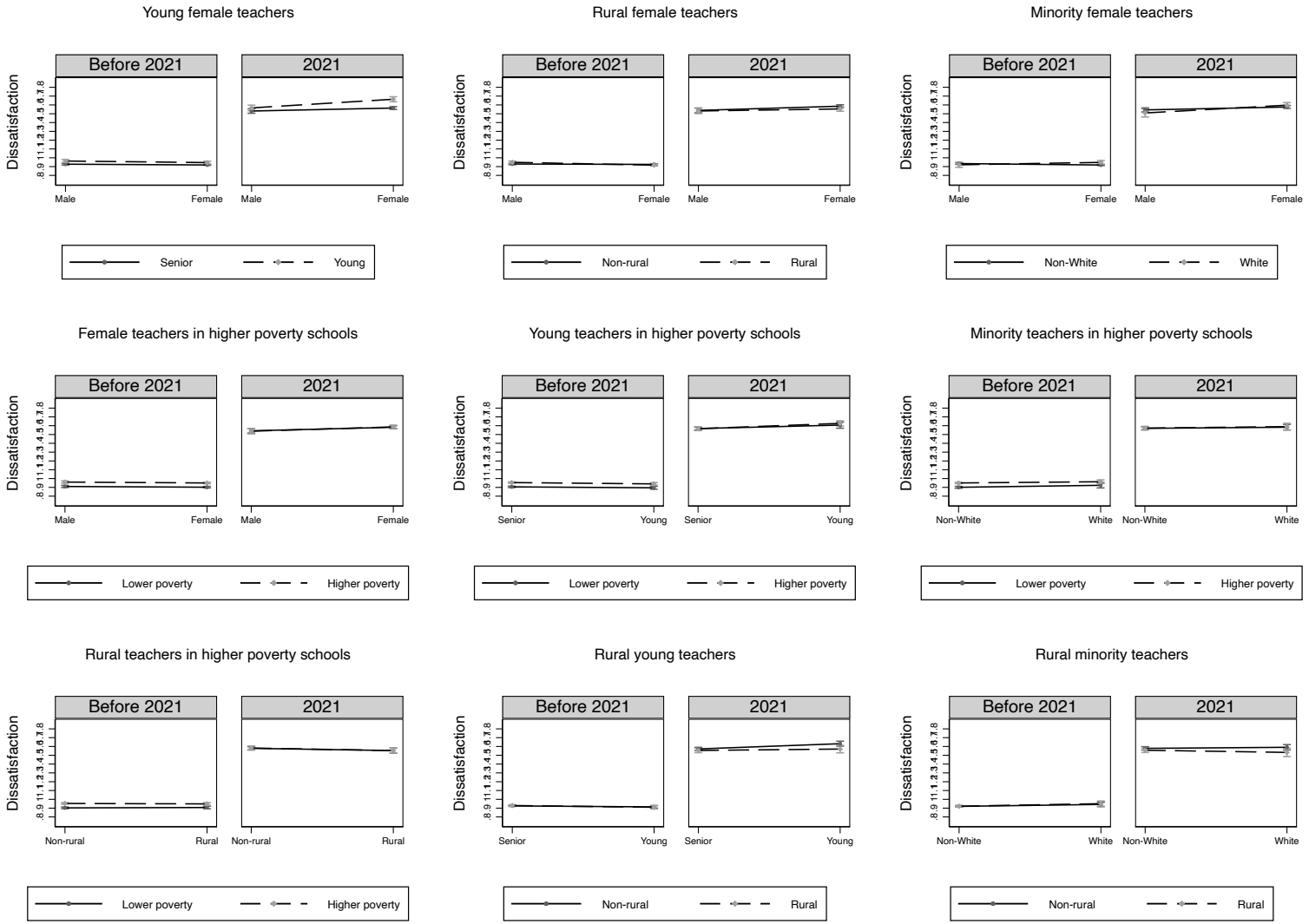

Figure 2. Differential relationships between select teacher and school characteristics and dissatisfaction.

Appendix Tables

Appendix Table 1. Description of the variables

Teacher and school characteristics	
Female	A dichotomous variable where 1 = female and 0 = male.
Black	A dichotomous variable where 1 = Black and 0 = non-Black.
Asian	A dichotomous variable where 1 = Asian and 0 = non-Asian.
American Indian	A dichotomous variable where 1 = American Indian and 0 = non-American Indian.
Hispanic	A dichotomous variable where 1 = Hispanic and 0 = non-Hispanic.
White	A dichotomous variable where 1 = White and 0 = non-White.
Under 30	A dichotomous variable where 1 = teacher is 30 years of age or younger and 0 = teacher is older than 30.
Senior	A dichotomous variable where 1 = teacher is 60 years of age or older and 0 = teacher is younger than 60.
Graduate degree	A dichotomous variable where 1 = teacher has graduate degree and 0 = no graduate degree.
Salary ($1,000)	A continuous variable of the base teaching salary for the entire school year, scaled in $1,000s, and in constant 2021 dollar.
Union member	A dichotomous variable where 1 = teacher is a union member and 0 = teacher is not a union member.
Suburban school	A dichotomous variable where 1 = school is classified as sub-urban by U.S. census and 0 = otherwise.
Rural school	A dichotomous variable where 1 = school is classified as rural by U.S. census and 0 = otherwise.
School enrollment	A continuous variable of the size of school where the teacher is teaching in the base year.
Secondary school	A dichotomous variable where 1 = the school is classified as a secondary school and 0 = the school is not classified as a secondary school.
High poverty school	A dichotomous variable where 1 = the majority of students at the school is eligible for federal free or reduced-price lunch and 0 = the majority of students at the schools is not eligible for federal free or reduced-price lunch.
Maj. minority school	A dichotomous variable where 1 = the majority of students at the school is non-White and 0 = the majority of students at the school is White.
Teacher working conditions	
Administrative support	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on the school administration's behavior toward the staff is supportive and encouraging. Measure standardized for each wave.
Teacher coop.	On a scale of 0 = strongly disagree and 3 = strongly agree, teachers report on the level of cooperative effort among the staff members.
Adequate materials	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on whether necessary materials such as textbooks, supplies, and copy machines are available as needed.
Teacher dissatisfaction and specific components	
Teaching not worth it	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "the stress and disappointments involved in teaching at this school aren't really worth it."
Lack of enthusiasm	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "I don't seem to have as much enthusiasm now as I did when I began teaching."
Too tired to teach	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "I think about staying home from school because I'm just too tired to go."
Not satisfied as a group	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "The teachers at this school like being here; I would describe us as a satisfied group." (reverse coded)
Not satisfied with how things are run	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "I like the way things are run at this school." (reverse coded)
Look for higher paying job	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "If I could get a higher paying job I'd leave teaching as soon as possible."
Look to transfer	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "I think about transferring to another school."
Not satisfied with salary	On a scale of 1 = strongly disagree and 4 = strongly agree, teachers report on "I am satisfied with my teaching salary" (reverse coded).

Teacher dissatisfaction	A factor score consisting of the eight components above.

Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS)

Appendix Table 2. Factor loadings of teacher (dis)satisfaction

	(1) Year 2004	(2) Year 2008	(3) Year 2012	(4) Year 2016	(5) Year 2021
Teaching not worth it	0.703	0.720	0.726	0.730	0.735
Lack of enthusiasm	0.660	0.623	0.645	0.653	0.627
Too tired to teach	0.561	0.509	0.525	0.544	0.558
Not satisfied as a group	0.635	0.638	0.652	0.660	0.659
Not satisfied with how things are run	0.640	0.659	0.650	0.668	0.683
Look for higher paying job	0.563	0.550	0.582	0.578	0.604
Look to transfer	0.625	0.622	0.643	0.669	0.650
Not satisfied with salary	0.292	0.304	0.331	0.327	0.349
Cronbach alpha	0.795	0.795	0.809	0.817	0.818
Factor determinancy	0.909	0.908	0.913	0.917	0.918
Observations	39380	33880	33970	28390	29160

Note. Alpha levels for this dissatisfaction factor are acceptable (Santos, 1999; Tavakol & Dennick, 2011). The determinancy coefficients from factor score indeterminacy are around 0.90, indicating good exploratory factors (Beauducel, 2011). Observations have been rounded to the nearest 10 per IES compliance. U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS).

Appendix Table 3. Association of teacher characteristics, school characteristics, and working conditions with teacher dissatisfaction for young teachers

	(1) Year 2021	(2) All years without 2021	(3) All years	(4) All years with interaction
Female	0.100**	-0.004	0.012	-0.006
	(0.019)	(0.009)	(0.010)	(0.010)
Black	0.085+	0.073*	0.076*	0.076*
	(0.047)	(0.035)	(0.031)	(0.031)
Asian	0.103*	0.060**	0.058**	0.058**
	(0.046)	(0.021)	(0.020)	(0.020)
American Indian	-0.012	-0.061	-0.043	-0.044
	(0.051)	(0.045)	(0.034)	(0.034)
Hispanic	0.039	-0.002	0.004	0.004
	(0.047)	(0.018)	(0.013)	(0.013)
Novice teacher	-0.104**	-0.108**	-0.107**	-0.107**
	(0.027)	(0.008)	(0.009)	(0.009)
Graduate degree	0.022	0.031**	0.030**	0.030**
	(0.025)	(0.009)	(0.008)	(0.008)
Salary per $1,000	-0.003**	-0.005**	-0.004**	-0.004**
	(0.001)	(0.001)	(0.000)	(0.000)
Union member	-0.032	-0.029+	-0.023	-0.023
	(0.030)	(0.017)	(0.017)	(0.017)
Suburban school	-0.072*	-0.039+	-0.041+	-0.041+
	(0.030)	(0.023)	(0.022)	(0.022)
Rural school	-0.099**	-0.048*	-0.050**	-0.051**
	(0.025)	(0.019)	(0.019)	(0.019)
School enrollment	0.000	-0.000**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Secondary school	-0.023	0.039**	0.029**	0.029**
	(0.032)	(0.009)	(0.009)	(0.009)
Combined elem and sec	-0.022	0.064**	0.044**	0.044**
	(0.031)	(0.014)	(0.014)	(0.014)
Majority FRPL school	-0.015	0.025*	0.014	0.014
	(0.020)	(0.012)	(0.009)	(0.009)
Major minority school	0.066*	0.083**	0.075**	0.075**
	(0.025)	(0.018)	(0.016)	(0.016)
Administrative support	-0.302**	-0.255**	-0.261**	-0.261**
	(0.016)	(0.008)	(0.008)	(0.007)
Teacher cooperation	-0.169**	-0.181**	-0.181**	-0.180**
	(0.016)	(0.008)	(0.008)	(0.008)
Adequate materials	-0.140**	-0.116**	-0.118**	-0.118**
	(0.019)	(0.005)	(0.005)	(0.005)
2021 Wave # Female				0.117**
				(0.018)
Constant	2.734**	2.521**	2.523**	2.538**
	(0.055)	(0.032)	(0.027)	(0.027)
Observations	4280	22470	26740	26740

Note. Nationally-representative weights are employed. Heteroskedastic-robust standard errors clustered at the state level are in parentheses. Young is defined as less than 30 years old. Observations have been rounded to the nearest 10 per IES compliance. U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS). $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Appendix Table 4. Association of teacher characteristics, school characteristics, and working conditions with teacher dissatisfaction accounting for COVID-19 cases and learning modalities

	(1) All teachers	(2) Interaction
Female	0.035**	0.026+
	(0.012)	(0.014)
Black	0.099**	0.099**
	(0.022)	(0.022)
Asian	0.056**	0.057**
	(0.019)	(0.019)
American Indian	0.080*	0.079*
	(0.032)	(0.031)
Hispanic	0.030	0.030
	(0.027)	(0.027)
young	0.085**	0.034*
	(0.015)	(0.015)
Novice teacher	-0.154**	-0.152**
	(0.019)	(0.019)
Graduate degree	0.019	0.019
	(0.012)	(0.012)
Salary per $1,000	-0.003**	-0.003**
	(0.000)	(0.000)
Union member	0.012	0.012
	(0.014)	(0.014)
Suburban school	-0.008	-0.008
	(0.008)	(0.008)
Rural school	-0.011	-0.011
	(0.017)	(0.017)
School enrollment	0.000	0.000
	(0.000)	(0.000)
Secondary school	-0.039	-0.039
	(0.027)	(0.027)
Combined elem and secondary	-0.033+	-0.033+
	(0.016)	(0.016)
Majority FRPL school	-0.004	-0.004
	(0.009)	(0.009)
Majority minority school	0.024*	0.024+
	(0.012)	(0.012)
Administrative support	-0.287**	-0.287**
	(0.008)	(0.008)
Teacher cooperation	-0.180**	-0.180**
	(0.009)	(0.009)
Agree-adequate materials	-0.135**	-0.136**
	(0.006)	(0.006)
Case rate per 100K	-0.001	-0.001
	(0.001)	(0.001)
Learn model start: Hybrid	0.016	0.015
	(0.021)	(0.021)
Learn model start: Virtual	0.010	0.010
	(0.019)	(0.019)
Learn model end: Hybrid	-0.000	-0.000
	(0.013)	(0.013)
Learn model end: Virtual	-0.008	-0.008
	(0.020)	(0.020)
Young # Female		0.064*
		(0.023)
Constant	3.234**	3.241**
	(0.034)	(0.035)
Observations	17060	17060

Note. Nationally-representative weights are employed. Heteroskedastic-robust standard errors clustered at the state level are in parentheses. Reference groups for learning model start and end are in person model respectively. Observations have been rounded to the nearest 10 per IES compliance. U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS) and National Teacher and Principal Survey (NTPS). + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$