

Factors Related to Teacher Resilience during COVID-19

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Abstract

Teachers were surveyed across the United States between January and February 2021 (n=355). Participants were asked about learning modalities employed at their school as well as other factors related to COVID-19 mitigation, job satisfaction, teacher self-efficacy, burnout, teacher autonomy, and student access to resources.

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Abstract

Teaching during the 2020-2021 school year was fraught with challenges related to the COVID-19 pandemic. In the United States, teacher experiences varied greatly from one context to another. Teacher attrition has been an issue of concern for years, and contemporary media outlets reported that this was being exacerbated by the pandemic. We surveyed teachers nationally between January and February 2021 (n=335). We sought to understand what factors were related to a teacher reporting an intention to remain in the classroom after the 2020-2021 school year. Logistic regression findings indicate that teachers approaching retirement age and those teaching in private schools were significantly less likely to report an intention to remain at their school. Conversely, we found that teacher autonomy, job satisfaction, and student access to resources outside of school were all positively associated with an intention to remain in their current position.

Keywords: COVID-19; teacher retention; teacher attrition; teacher autonomy; job satisfaction; retirement age

Factors Related to Teacher Resilience during COVID-19

The COVID-19 viral pandemic disrupted all facets of daily life in early 2020, and K-12 schooling was no exception. By March 23, all but two states ordered their schools closed for in person instruction as part of a larger effort to curb the spread of the virus (Bourne, 2021; Maranto et al., 2020; Marshall, 2022). With face-to-face instruction no longer an option, schools were forced to transition to remote instruction for the remainder of the 2019-2020 school year (Marshall et al., 2020a). While schools reopened remotely or in person uniformly in most European and East Asian countries (Maranto et al., 2022), schools in the United States began the 2020-2021 school year with a range of learning modalities (Marshall & Bradley-Dorsey, 2020). These modalities were not stable; school districts that began the year with remote instruction often transitioned to a hybrid or fully in-person model as the year progressed (e.g., New York City). At the same time, districts that began the school year offering some amount of in-person learning, often shifted to remote learning – especially as COVID-19 cases climbed in the winter 2020-2021 months – before shifting back to in-person learning for the spring of 2021 (e.g., Douglas County, CO). Teaching is a challenging profession under normal circumstances, and teaching during the COVID-19 pandemic was even more challenging (Love & Marshall, 2022; Marshall et al., 2020a; Marshall et al., in press). Several factors suggest that teacher conditions during the pandemic could lead to increased teacher attrition (Zamarro et al., 2022). This study sought to a single research question: What factors are associated with teachers remaining in the classroom?

Teacher Retention and Attrition

Ample research suggests that quality teachers are the greatest contributor to student achievement (e.g., Hanushek, 2016). As such, it is important for schools to retain good teachers.

The literature on teacher retention and attrition suggests that this was an area of concern that long predated the COVID-19 pandemic. Goldring and colleagues (2014) found that the rate at which new teachers leave the profession has doubled since 1991. Ingersoll (2014) reports that 41% of teachers leave the classroom within the first five years of their career. Gray and Taie (2015) estimate this figure to be lower (17%). Papay and his colleagues (2017) suggest that teacher attrition statistics could be inflated, especially in urban contexts, when those who temporarily leave the classroom and later return are counted as attrition statistics. For example, a teacher may decide not to teach for a few years following the birth of a child and return to the classroom when the child is older. Regardless, it remains true that novice teachers are more likely than veteran teachers to leave the profession (Marshall, 2017).

Not all teacher attrition is necessarily bad. If poor performing teachers leave the profession and are replaced by teachers who are better, this type of attrition would be a good thing for students. There is some evidence that the teachers who leave tend to be less proficient at their job (Boyd et al., 2011; Feng & Sass, 2017). However, this assumes two things for which there is little evidence. First, this would assume an even distribution of teacher attrition across contexts. Evidence suggests that urban and rural schools have greater difficulty attracting and retaining teachers (Lankford et al., 2002; Maranto & Shuls, 2013), especially in areas with high levels of poverty (Borman & Maritza-Dowling, 2008; Glazer, 2020; Gross & DeArmond, 2010). This also assumes that there is a pool of quality teachers that are ready to take the place of the teachers that leave. Evidence suggests that fewer teachers are being prepared. In their research studying teacher labor force trends in Pennsylvania, Fuller and Pendola (2020) found substantial declines in the number of teachers that were being prepared between 2011 and 2019. These trends were especially true for science, technology, engineering, and math (STEM) teachers,

special education teachers, and English language learner teachers (Billingsley & Bettini, 2019; Carver & Darling-Hammond, 2019; Fuller & Pendola, 2020; Powell et al., 2022).

There is no single reason for teacher attrition. Teachers leave the classroom for a range of reasons, several of which have little to do with the profession. For example, teachers may leave because they are relocating because of a spouse's new job (Plash & Piotrowski, 2001) or to stay home and spend time with young children (Kersaint et al., 2007). However, there are several reasons teachers leave that are related to the work they do in schools. Teachers have cited unsupportive administrators (Fuller et al., 2018; Marshall et al., 2020b; Scallion et al., 2021), a lack of teacher autonomy (Glazer, 2020), district demands for improvement (Holmes et al., 2019), and poor compensation (Fuller et al., 2018) as reasons they have either left or considered leaving the profession. Overall, teachers listed reasons that had to do with the adults with and for which they worked – not the students they taught.

Teacher Experiences During COVID-19

Teaching became a much more challenging profession during the pandemic, and teacher experiences varied widely from one context to another (Marshall & Bradley-Dorsey, 2020). Teaching remotely, especially for elementary school teachers, was found to be related to lower levels of teacher self-efficacy (Pressley & Ha, 2021; Pressley, 2021a). Zamarro and colleagues (2022) explored a number of factors that predicted teachers remaining in the classroom during COVID-19 and being of retirement age was one of them. It is intuitive that teachers who were eligible to retire and unsatisfied with COVID-19 working conditions might be more apt to decide to leave the profession. However, they did not find this to be a significant predictor in their study. Teachers who taught in-person and remote students at the same time, a modality often referred to as HyFlex, to be particularly challenging (Bartlett, 2022). Findings from qualitative

studies also found HyFlex teaching to be more time-consuming and difficult for teachers to balance the needs of students present in the classroom as well as those virtually attending (Bartlett, 2022; Pressley, 2021b). In terms of student performance, Wilson and Alexander (2021) conducted a study of HyFlex learners and found there to be no significant differences in student grades based on the amount of in-person class sessions attended. Pressley (2021c) found that a lack of administrative support was associated with teachers experiencing burnout during the COVID-19 pandemic. Given the additional challenges that came with teaching during COVID-19, it is important to understand the factors that are keeping teachers in the classroom. While previous literature has explored how COVID-19 impacted teaching and teachers, no peer reviewed article to date has explored the impact that the pandemic had on teachers leaving.

Current Study

This study aimed to understand PK-12 teacher experience in the midst of the COVID-19 pandemic. We were specifically interested in the impact that learning modalities and other COVID-19-related variables, teacher autonomy, burnout, job satisfaction, and teacher efficacy had on whether or not teachers intended to remain in the classroom for the following school year. Much literature in this area focuses on the negative, exploring factors that cause teachers to want to leave the profession. Here, we were interested in learning more about the factors that motivated teachers to stay during this pivotal moment in history.

Data Sources

To answer our research question, we surveyed a voluntary sample of teachers nationwide between January 23, 2021 and February 19, 2021. After obtaining IRB approval, we distributed an anonymous survey link using our personal networks of teachers. The link was also shared on

social media networks including Facebook and Reddit. Participants had to be currently employed as PK-12 teachers to be included in this study.

The sample included a total of 468 responses, of which 335 had complete data. This study's participants predominantly identified as White (86.26%), female (81.30%), had an average age of 36.83 years, and had been teaching for 9.63 years. More than half of the sample (54.03%) indicated that they teach in a Title 1 school, and a plurality teach in a suburban setting (41.49%). Almost four in ten (38.21%) of our teachers shared that they had been forced to quarantine at some point during the 2020-2021 school year as a result of either becoming infected with COVID-19 or being in close contact with someone who had become infected with the virus. As of January 2021, 62.39% of our study's participants indicated that their school offered some in-person instruction, whether it was a hybrid model or fully in person, and approximately one-third of them were simultaneously teaching students who were both in person and remote. See Table 1 for descriptive statistics for the sample.

Table 1.

Demographics of Participants

<u>Variable</u>	<u>%</u>	<u>M</u>	<u>SD</u>
Age		36.83	10.10
Age = 55+	27.46		
Race			
African American/Black	4.58		
Asian American	1.15		
Hispanic or Latina/o	5.34		
Indigenous/Native American	0.38		
White or Caucasian	86.26		

Gender	
Female	81.30
Male	18.32
Non-Binary	0.38
Taught Elementary Grade	36.72
Taught Elective Course	15.82
Special Education	21.19
Was in Quarantine due to COVID-19	38.21
Taught in Person as of January 2021	62.39
Taught In-Person & Remote Students Simultaneously	33.13
Taught in Charter School	6.57
Taught in Private School	10.15
Taught in Title I School	54.03
Geographic Location	
Rural	18.81
Small Town	8.36
Suburban	41.49
Urban	31.34

Note: N=335

Instrumentation

The survey administered in this study included: demographic and contextual items, factors related to COVID-19, six scales described below, and an item asking participants about

their intention to remain in the classroom for the 2021-2022 school year See Table 2 for a list of variables included in the models.

Table 2.

Variables Included in Models

<u>Variable</u>	<u>Models</u>	<u>Description</u>
Retirement Age	I, II, III	Participant was age 55 or greater as of January 1, 2021 (1=Yes, 0=No)
Special Education	I, II, III	Participant was a special education teacher (1=Yes, 0=No)
Elementary Grades	I, II, III	Participant taught grades PK-5 (1=Yes, 0=No)
Rural	I, II, III	Participant's school was in a rural area (1=Yes, 0=No)
Small Town	I, II, III	Participant's school was in a small town (1=Yes, 0=No)
Urban	I, II, III	Participant's school was in an urban area (1=Yes, 0=No)
Charter School	I, II, III	Participant taught in a charter school (1=Yes, 0=No)
Private School	I, II, III	Participant taught in a private school (1=Yes, 0=No)
Title I	I, II, III	Participant taught in a Title I school (1=Yes, 0=No)
Taught In-Person & Remote	II, III	Participant taught both in-person and remote students simultaneously (1=Yes, 0=No)
January 2021 In-Person	II, III	Participant was teaching in person or hybrid (not exclusively remote) as of January 2021 (1=Yes, 0=No)
Quarantine	II, III	Participant had to quarantine at least once due to either contracting or being in close contact with someone who contracted COVID-19 (1=Yes, 0=No)

Job Satisfaction Scale

The Job Satisfaction Scale (Skaalvik & Skaalvik, 2014) is comprised of four items. Each item was measured on a six-point scale with anchors (1) “strongly disagree” and (6) “strongly agree.” Skaalvik and Skaalvik (2011) found the internal reliability to be .91. In this study, the internal reliability was .89 and participants had a mean score of 4.08 (SD=1.10).

Teacher Sense of Efficacy Scale

The Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) is comprised of three subscales, two of which were used in this study. The Student Engagement ($\alpha=.81$) and Classroom Management ($\alpha=.86$) subscales are comprised of four items each. In the current study, we used a 7-point scale. Krosnick and Presser (2010) have noted that increases in reliability are negligible beyond 7 points. The internal reliability for the Student Engagement scale (M=4.60, SD=0.99) was .73 and was .81 for the Classroom Management scale (M=5.32, SD=1.10).

Friedman’s Burnout Questionnaire

The Friedman Burnout Questionnaire (Friedman, 2000) is comprised of 14 items that include three subscales – one for exhaustion, de-personalization, and non-self-fulfillment. Friedman (2000) found overall reliability to be .90. Items were measured on a six-point scale with anchors (1) “strongly disagree” and (6) “strongly agree.” In the current study, the internal reliability was .86 and participants had a mean score of 3.62 (SD=0.75).

Teacher Leadership and Autonomy Scale

The Teacher Leadership and Autonomy Scale (Virginia Department of Education, 2021) is comprised of nine items that ask participants to respond to the following prompt: “How strongly do you agree or disagree with the following statements about your school?” Participants

respond on a six-point scale with response options ranging from (1) “strongly disagree” to (6) “strongly agree.” In the current study, the internal reliability was .83 and participants had a mean score of 3.67 (SD=0.95).

Student Access to Resources Scale

We added a sixth scale that we created for this study – the Student Access to Resources Scale. Ample evidence suggested that students having access to resources during pandemic impacted their ability to fully participate in instruction, as well as teachers’ ability to teach (Love & Marshall, 2022; Manfuso, 2020; Marshall et al., 2020; Marshall & Neugebauer, 2022; Vanourek, 2020). The scale was comprised of six items that asked participants to respond to the following prompt: “To what extent would you agree with the following statement: “My students have access to...” Participants responded on a six-point scale that ranged from (1) “strongly disagree” to (6) “strongly agree” for the six items. The scale had an internal reliability of .83 and participants had a mean score of 4.56 (SD=1.14). See Appendix A for the full scale.

Findings

All models were tested using logistic regression analysis (Darlington & Hayes, 2017), and all analyses were conducted in Stata 15. Prior to analyses being conducted, the data were screened to ensure that the requisite assumptions were met for logistic regression analysis. Logistic regression analysis does not require multivariate normality or homoscedasticity and does not assume a normal distribution of error terms (Tabachnick & Fidell, 2013). Any records that included missing data were removed prior to analysis. Collinearity diagnostics were run for each model, and variance inflation factor values were found to be acceptable. The dependent variable for each model was a binary variable indicating whether a teacher intended to return to their school for the following school year. The first model included teacher and contextual

variables. A trio of COVID-19-related variables were added for the second model. A third model was run that included all of the variables in the first two models and added the six scales. The reference category for all models tested was a suburban secondary teacher under the age of 55 that teaches in a traditional public school system in a non-Title 1 school. Models were evaluated in terms of model fit by comparing log pseudolikelihood values (Besag, 1977), as well as in terms of an approximation of the amount of variance that was explained by predictor variables (Hosmer et al., 2013). See Table 3 for beta coefficients and standard errors for each of the three models tested.

Table 3.

Factors Related to Teacher Resilience – Logistic Regression Findings

	Model 1	Model 2	Model 3
<u>Variable</u>	β (SE)	β (SE)	β (SE)
Retirement Age (55+)	-1.781** (.282)	-1.778** (.283)	-2.311** (.337)
Special Education	-.141 (.299)	-.150 (.300)	-.182 (.343)
Elementary Grades	.311 (.265)	.280 (.271)	.758 (.331)
Rural	-.057 (.354)	-.035 (.358)	-.095 (.412)
Small Town	.498 (.476)	.489 (.477)	.554 (.532)
Urban	-.068 (.297)	-.112 (.306)	.273 (.351)
Charter School	.141 (.504)	.140 (.505)	.131 (.592)
Private School	-.838 (.431)	-.795 (.435)	-1.199* (.500)
Title 1	.113 (.265)	.115 (.266)	.300 (.309)
HyFlex (Remote & In Person)		-.082 (.279)	-.243 (.316)
In-Person Offered – January 2021		-.184 (.278)	.003 (.319)
Quarantined		-.058 (.251)	-.046 (.281)

Burnout	.132			
	(.243)			
Teacher Autonomy	.478*			
	(.195)			
Job Satisfaction	.746**			
	(.183)			
Student Access to Resources	.525			
	(.181)			
Teacher Efficacy – Classroom Mgmt.	.183			
	(.153)			
Teacher Efficacy – Student Engagement	-.293			
	(.183)			
	N	335	335	335
	McFadden's R ²	.120	.122	.271
	-2 Log Pseudolikelihood	-201.637	.201.220	-167.004

*Note: N=335; ** $p < .01$; $p < .05$; reference category is a suburban secondary teacher under the age of 55 that teaches in a traditional public school system in a non-Title 1 school*

Teacher and Contextual Factors

The first model tested nine factors related to the participant and the school in which they taught. The first model was significant ($p < .001$) and yielded a McFadden's R² of .120; approximately 12% of the variance was explained by these variables. Three variables were found to be significant predictors of a teacher's intention to return to teach in their school the following year. Elementary school teachers had more than twice the odds of secondary teachers of staying at the same school the following year (OR=2.135). Conversely, private school teachers had less than one-third the odds of returning to the same school (OR=.301). The strongest predictor was whether a teacher was age 55 or above, a proxy for them being in range of retirement. Teachers in this age range had less than one-tenth the odds of returning to the same school compared to younger peers (OR=.099).

COVID-19-Related Factors

The second model added three COVID-19-related factors to the teacher and contextual factors. Dummy variables were included to represent: (1) whether the participant was teaching in-person as of January 2021; (2) whether the participant was teaching in-person and remote students simultaneously (HyFlex); and (3) whether the teacher had to quarantine as a result of COVID-19 during the school year. This model did not significantly improve compared to the first model tested. It yielded a McFadden's R^2 of .122 (compared to .120 for the first model). None of the three COVID-19-related variables significantly predicted whether a teacher would remain at their school.

Burnout, Efficacy, Autonomy, Job Satisfaction, and Student Resources

The third and final model added six scales to test for the effects of teacher burnout, efficacy, autonomy, job satisfaction, and student access to resources on whether they intended to remain at the same school the following year. The model significantly improved over the second model ($p < .001$) and yielded a McFadden's R^2 of .271, which was more than double that of the first two models. Teacher autonomy ($\beta = .478, p < .05$) and job satisfaction ($\beta = .746, p < .01$) significantly and positively predicted teacher intention to stay at their school. Being of retirement age and teaching in private schools negatively predicted intent to stay in the full model as well.

Discussion

This study sought to understand what predicted teachers desiring to remain in their classroom. Elementary school teachers were more likely to report an intention to remain at their school while teachers of retirement age (55 and older) and those teaching in private schools were less likely to remain. Teacher autonomy and job satisfaction were positively related to having an intention to remain at their school. These findings are consistent with previous literature that

suggests that job satisfaction is related to teacher retention (Perrachione et al., 2008), as is teacher autonomy (Glazer, 2020). By contrast, where Zamarro and colleagues (2022) did not find teachers who were of retirement age to be more likely to leave the classroom, this study's findings did.

Interestingly, none of the three COVID-19-related variables tested were found to be significant predictors. Three of these findings were contrary to what has previously been found in emerging COVID-19 educational literature. Previous work also found teachers who were forced to teach students who were in person and virtual at the same time found this to be extraordinarily challenging (e.g., Bartlett, 2022). However, teachers who were asked to teach using a HyFlex modality in January-February 2021 in this study were not more likely to leave their school. It is possible that teachers who had to endure this knew that this was not a long-term condition, and as such, it was not changing long-term plans regarding their employment.

This study's findings have important implications for educational leaders and policymakers. As mentioned earlier, teacher attrition trends were a concern prior to the COVID-19 pandemic. However, the pandemic has had a negative impact on the teacher labor workforce in two important ways. Teaching during the pandemic was a difficult task, and one that in many cases required much more effort than before, and with teacher-student relationships mediated by facial coverings, social distancing, and virtual interactions. Student-teacher relationships have been found to be an important predictor of teacher job satisfaction (Veldman et al., 2013), and teaching during the pandemic took much of the intrinsic reward out of the job for many teachers. Second, there is emerging evidence in international literature that suggests that the number of individuals who are training to be teachers is decreasing (e.g., la Velle, 2020). When the teacher attrition figures from before the pandemic meet the unsatisfactory work conditions of the

pandemic and fewer new teachers joining the ranks, a potential crisis exists. Our findings suggest that teachers who reported high levels of autonomy were significantly less likely to indicate that they planned to leave. As such, school leaders should find ways to give teachers additional space to do their professional work. Teachers who feel that their leaders trust them to do their jobs are more likely to be satisfied with their jobs and less likely to leave.

There are some limitations worth noting related to this work. First, the sample was obtained by asking teachers to respond to an anonymous link. It is possible that those who elected to complete this survey had experiences that systematically differed from those who did not complete the survey. Since much of the participant recruitment took place over social media networks, it is also possible that teachers who interact with these platforms differ in some way from those who do not engage with social media. The sample that we obtained was also predominantly White and female. Future survey iterations should strive to obtain a more diverse sample. Finally, the full model tested in this study predicted about 27% of the variance, indicating that factors that were not included in this study are influencing teachers' decisions to remain in the classroom. Future studies should also include longitudinal work aimed at better understanding the impact that the COVID-19 pandemic has had on the teacher labor market. Additional qualitative research would also be important to conduct to further unpack why teachers are making the choice to stay in the profession. As important as it is to understand what causes teachers to leave the profession, it is equally important to understand what causes teachers to remain dedicated to their professional work.

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References

- Bartlett, L. (2022). Specifying hybrid models of teachers' work during COVID-19. *Educational Researcher*, 51(2), 152-155. <https://doi.org/10.3102/0013189X211069399>
- Besag, J. (1977). Efficiency for pseudolikelihood estimation for simple Gaussian fields. *Biometrika*, 64(3), 616-618. <https://doi.org/10.1093/biomet/64.3.616>
- Billingsley, B., & Bettini, E. (2019). Special education teacher attrition and retention: A review of the literature. *Review of Educational Research*, 89(5), 697-744. <https://doi.org/10.3102/0034654319862495>
- Borman, G. D., & Maritz-Dowling, N. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research*, 78(3), 367-409. <https://doi.org/10.3102/0034654308321455>
- Bourne, R. A. (2021). *Economics in one virus: An introduction to economic reasoning through COVID-19*. Cato Institute.
- Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. (2011). The influence of school administrators on teacher retention decisions. *American Educational Research Journal*, 48(2), 303-333. <https://doi.org/10.3102/0002831210380788>
- Carver-Thomas, D., & Darling-Hammond, L. (2019). The trouble with teacher turnover: How teacher attrition affects students and schools. *Education Policy Analysis Archives*, 27(36). <http://dx.doi.org/10.14507/epaa.27.3699>
- Darlington, R. B., & Hayes, A. F. (2017). *Regression analysis and linear models: Concepts, applications, and implementation*. The Guilford Press.

- Feng, L., & Sass, T. R. (2017). Teacher quality and teacher mobility. *Education Finance and Policy*, 12(3), 396-418. https://doi.org/10.1162/EDFP_a_00214
- Friedman, I. (2000). Burnout in teachers: Shattered dreams of impeccable professional performance. *Journal of Clinical Psychology*, 56(5), 595-606.
- Fuller, E., Pendola, A., & Young, M. D. (2018). Policy brief 2018-2: The role of principals in reducing teacher turnover and the shortage of teachers. *University Council for Educational Administration*.
- Fuller, E., & Pendola, A. (2020). *K-12 teacher supply, demand, and shortages in Pennsylvania*. Harrisburg, PA: The Center for Rural Pennsylvania.
<https://www.rural.palegislature.us/documents/reports/PA-Teacher-Supply-Demand-Shortages-2020.pdf>
- Glazer, J. (2020). The schools teachers choose. *Phi Delta Kappan*, 102(3), 14-17.
<https://doi.org/10.1177/0031721720970694>
- Goldring, R., Taie, S., Riddles, M., & Owens, C. (2014). *Teacher attrition and mobility: Results from the 2012-13 teacher follow-up survey* (NCES 2014-077). Washington, DC: National Center for Education Statistics.
- Gray, L., & Taie, S. (2015). *Public school teacher attrition and mobility in the first five years: Results from the first through fifth waves of the 2007-08 Beginning Teacher Longitudinal Study* (NCES 2015-337). Washington, DC: National Center for Education Statistics.
<https://nces.ed.gov/pubs2015/2015337.pdf>
- Gross, B., & DeArmond, M. (2010). *Parallel patterns: Teacher attrition in charter vs. district schools*. Seattle, WA: Center for Reinventing Public Education.
http://www.crpe.org/sites/default/files/pub_ics_Attrition_Sep10_0.pdf

Hanushek, E. A. (2016). What matters for student achievement. *Education Next*, 16(2), 18-26.

<http://educationnext.org/what-matters-for-student-achievement>

Holmes, B., Parker, D., & Gibson, J. (2019). Rethinking teacher retention in hard-to-staff schools. *Contemporary Issues in Education Research*, 12(1), 27-33.

Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). John Wiley & Sons.

Ingersoll, R., Merrill, L., & May, H. (2014). *What are the effects of teacher education and preparation on beginning teacher attrition?* Philadelphia, PA: Consortium on Policy Research in Education. https://repository.upenn.edu/cpre_researchreports/78

Kersaint, G., Lewis, J., Potter, R., & Meisels, G. (2007). Why teachers leave: Factors that influence retention and resignation. *Teaching and Teacher Education*, 23(6), 775-794. <https://doi.org/10.1016/j.tate.2005.12.004>

Krosnick, J. A., & Presser, S. (2010). Question and questionnaire design. In P. V. Marsden & J. D. Wright (Eds.), *Handbook of survey research* (2nd ed.) (pp. 263-313). Emerald.

la Velle, L., Newman, S., Montgomery, C., & Hyatt, D. (2020). Initial teacher education in England and the COVID-19 pandemic: Challenges and opportunities. *Journal of Education for Teaching*, 46(6), 595-608. <https://doi.org/10.1080/02607476.2020.1803051>

Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Teaching and Teacher Education*, 77(1), 37-62. <https://doi.org/10.3102/01623737024001037>

- Love, S. M., & Marshall, D. T. (2022). Teacher experiences during COVID-19. In D. T. Marshall (Ed.), *COVID-19 and the classroom: How teachers navigated the great disruption* (pp. 21-65). Lexington Books.
- Maranto, R., & Shuls, J. V. (2013). How do we get them on the farm? Efforts to improve rural teacher recruitment and retention in Arkansas. *The Rural Educator*, 34(1), 1-9.
<https://doi.org/10.35608/ruraled.v34i1.406>
- Maranto, R. Queiroz e Melo, & Glenn, C. (2020). Introduction to a special section on COVID-19 and schooling in the U.S.: Disruption, continuity, quality, and equity. *Journal of School Choice*, 14(4), 527-533. <https://doi.org/10.1080/15582159.2020.1836800>
- Maranto, R. A., Glenn, C., & Queiroz e Melo, R. (2022). International differences in school responses to COVID-19. In D. T. Marshall (Ed.), *COVID-19 and the classroom: How teachers navigated the great disruption* (pp. 165-181). Lexington Books.
- Marshall, D.T. (2017). Equity and access in charter schools: Identifying issues and solutions. *Education Policy Analysis Archives*, 25(83), 1-18. <https://doi.org/10.14507/epaa.25.2745>
- Marshall, D. T., Shannon, D. M., & Love, S. M. (2020a). How teachers experienced the COVID-19 transition to remote instruction. *Phi Delta Kappan*, 102(3), 46-50.
<https://doi.org/10.1177/0031721720970702>
- Marshall, D. T., Varier, D., Hope, S. T., & Abrams, L. M. (2020b). The role of mentor-resident match in a teacher residency program: A comparison of three cases. *Journal of Research in Education*, 29(2), 88-117.
- Marshall, D. T., & Bradley-Dorsey, M. (2020). Reopening America's schools: A descriptive look at how states and large school districts are navigating fall 2020. *Journal of School Choice*, 14(4), 534-566. <https://doi.org/10.1080/15582159.2020.1822731>

- Marshall, D. T. (Ed.). (2022). *COVID-19 and the classroom: How teachers navigated the great disruption*. Lexington Books.
- Marshall, D.T., & Neugebauer, N. M. (2022). How charter school leaders navigated COVID-19. In D.T. Marshall (Ed.), *COVID-19 and the classroom: How schools navigated the great disruption* (pp. 107-122). Lexington Books.
- Marshall, D. T., Love, S. M., Neugebauer, N. M., & Smith, N. E. (in press). How additional professional time benefitted teachers during COVID-19. In S. M. McCarther & D. M. Davis (Eds.), *Breakthrough: From pandemic panic to promising practice*. Information Age Publishing.
- Papay, J. P., Bacher-Hicks, A., Page, L. C., & Marinell, W. H. (2017). The challenge of teacher retention in urban schools: Evidence of variation from a cross-site analysis. *Educational Researcher*, 46(8), 434-448. <https://doi.org/10.3102/0013189X17735812>
- Perrachione, B. A., Rossier, V. J., & Petersen, G. J. (2008). Why do they stay? Elementary teachers' perceptions of job satisfaction and retention. *The Professional Educator*, 32(2).
- Plash, S., & Piotrowski, C. (2001). Retention issues: A study of Alabama special education teachers. *Education*, 127(1), 125-128.
- Powell, C., Scott, L. A., Oyefuga, E., Dayton, M., Pickover, G., & Hicks, M. A. C. (2022). COVID-19 and the special education teacher workforce. In D. T. Marshall (Ed.), *COVID-19 and the classroom: How schools navigated the great disruption* (pp. 263-278). Lexington Books.
- Pressley, T., & Ha, C. (2021). Teaching during a pandemic: United States teachers' self-efficacy during COVID-19. *Teaching and Teacher Education*, 106, 103465. <https://doi.org/10.1016/j.tate.2021.103465>

- Pressley, T. (2021a). Returning to teaching during COVID-19: An empirical study on elementary teachers' self-efficacy. *Psychology in the Schools*, 58, 1611-1623.
<https://doi.org/10.1002/pits.22528>
- Pressley, T. (2021b). Elementary hybrid and virtual teacher stress during COVID-19. *Journal of Research in Education*, 30(3), 97-116.
- Pressley, T. (2021c). Factors contributing to teacher burnout during COVID-19. *Educational Researcher*, 50(5), 325-327. <https://doi.org/10.3102/0013189X211004138>
- Scallon, A. M., Bristol, T. J., & Esboldt, J. (2021). Teachers' perceptions of principal leadership practices that influence teacher turnover. *Journal of Research on Leadership Education*, 1-23. <https://doi.org/10.1177/19427751211034214>
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27, 1029-1038.
<https://doi.org/10.1016/j.tate.2011.04.001>
- Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports; Employment Psychology & Marketing*, 114(1), 68-77.
<https://doi.org/10.2466/14.02.PRO.114k14w0>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)

Vanourek, G. (2020). *Schooling Covid-19: Lessons from leading charter networks from their transition to remote learning*. Thomas B. Fordham Institute.

<https://fordhaminstitute.org/national/research/schooling-covid-19-lessons-leading-charter-networks-their-transition-remote>

Veldman, I., van Tartwijk, J., Brekelmans, M., & Wubbels, T. (2013). Job satisfaction and teacher-student relationships across the teaching career: Four case studies. *Teaching and Teacher Education*, 32(1), 55-65. <https://doi.org/10.1016/j.tate.2013.01.005>

Virginia Department of Education. (2021). *Review coy 2021 Virginia school survey: Classroom instructors*. <https://doe.virginia.gov/support/201-va-school-survey-classroom-instructors>

Wilson, T. J., & Alexander, M. (2021). HyFlex course delivery: Addressing the change in course modality brought on by the pandemic. *Journal of the International Society for Teacher Education*, 25(2), 41-58. <https://doi.org/10.26522/jiste.v25i2.3668>

Zamarro, G., Camp, A., Fuchsman, D., & McGee, J. B. (2022). Understanding how COVID-19 has changed teachers' chances of remaining in the classroom. University of Arkansas Working Paper Series (EDRE Working Paper 2022-01). Fayetteville, AR: University of Arkansas. <https://scholarworks.uark.edu/edrepub/127>

Appendix A.

Student Access to Resources Scale

To what extent would you agree with the following statement:

My students have access to...

Participants respond on a six-point scale: (1) strongly disagree; (2) disagree; (3) somewhat disagree; (4) somewhat agree; (5) agree; (6) strongly agree.

1. A webcam for video conferencing
2. Connectivity software (e.g., Zoom, Google Classroom, Skype, etc.)
3. Productivity software (e.g., word processing, presentation software, etc.)
4. Cloud storage access (e.g., Dropbox, Onedrive, Box, etc.)
5. Email access
6. Reliable internet access