

DISCUSSION PAPER SERIES

IZA DP No. 13361

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## ABSTRACT

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# Stress Test: Examining the Evolution of Teachers' Mental Health Over Time\*

Teaching is often assumed to be a relatively stressful occupation and occupational stress among teachers has been linked to poor mental health, attrition from the profession, and decreased effectiveness in the classroom. Despite widespread concern about teachers' mental health, however, little empirical evidence exists on long-run trends in teachers' mental health or the prevalence of mental health problems in teaching relative to other professions. We address this gap in the literature using nationally representative data from the 1979 and 1997 cohorts of the National Longitudinal Survey of Youth (NLSY). In the 1979 cohort, women who become teachers have similar mental health to non-teachers prior to teaching but enjoy better mental health than their non-teaching peers, on average, while working as teachers. However, in the 1997 cohort teachers self-report worse mental health, on average, than the 1979 cohort and fare no better than their non-teaching professional peers while teaching. Overall, teachers seem to enjoy mental health outcomes that are as good or better than their peers in other professions.

**JEL Classification:** I2

**Keywords:** mental health, accountability, teacher quality, teacher retention

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## **1. Introduction**

Anecdotes abound about the stress, depressive symptoms, and mental health issues experienced by teachers, particularly early-career teachers and those serving disadvantaged communities. An NPR article entitled “Hey, New Teachers, It’s OK to Cry in Your Car” quotes a rookie Chicago Public School teacher as saying “I left [school] and I got in my car and I just cried” (Anderson, 2015). A voluminous literature in education finds that many classroom teachers report feelings of stress, job dissatisfaction, and burnout (Guglielmi & Tatrow, 1998). This is troubling, as stress, depression, and socio-emotional competence correlate with attrition from the profession, classroom quality, and student development (Jennings & Greenberg, 2009; McLean & Connor, 2015). However, the determinants and evolution of teachers’ mental health is poorly understood, as are the extent to which teachers differ from other professionals in their mental health and how education policy affects teachers’ mental health (Kyriacou, 2001; Van Droogenbroeck & Spruyt, 2015).

The extant literature on teachers’ mental health often relies on cross-sectional, relatively small surveys of teachers. The focus is generally on average levels of self-reported stress, depression, burnout, or other indicators of teachers’ mental health. Rarely does this literature draw direct comparisons between teachers and observationally similar professionals in other lines of work, which raises the question of whether teaching uniquely affects (or selects on) the mental health of its professional workforce. Moreover, changes in both policies governing public schools and the relative prestige and real wages of teaching over time (Allegretto & Mishel, 2016; Dizon-Ross, Loeb, Penner, & Rochmes, 2018) suggests that teachers’ mental health, relative to their peers, might have changed over time.

This paper contributes to the existing literature by using large, nationally representative surveys to (i) describe long-run trends in teachers' mental health and (ii) compare teachers' mental health to that of observationally similar peers in other occupations. We examine trends in teachers' mental health using data from two cohorts of the National Longitudinal Survey of Youth (NLSY) – one from 1979 (NLSY79) and a more recent cohort from 1997 (NLSY97). The NLSY studies collect survey data from a nationally representative sample of adolescents and young adults, generally before college and labor market entry, and follow the panel of participants for several decades. The NLSY asks participants in both cohorts a variety of questions regarding mental health at multiple points in time.

The longitudinal nature of the two NLSY surveys allows us to make two primary contributions to the literature on teacher mental health. First, we document trends in teachers' mental health over time both within and between two cohorts of teachers. In general, women who become teachers report lower levels depression while in-service relative to both their pre- and post-service levels of depression. The apparent mental health benefits of teaching appear in both cohorts. However, teachers in the more recent 1997 cohort report higher levels of depression, on average, than teachers in the older 1979 cohort.

Second, we compare the mental health of those who enter teaching to that of non-teachers, paying specific attention to occupations that are arguably comparable to teaching. NLSY participants in the older 1979 cohort show systematically lower levels of depression relative to non-teachers in their cohort. This gap favoring teachers grows over time within the cohort. However, in the more recent 1997 cohort, the mental health gap between teachers and non-teachers becomes small and statistically indistinguishable from zero, which suggests that teachers' mental health has changed over time relative to previous generations of teachers and

relative to their non-teaching peers. That said, in neither cohort do teachers report systematically worse mental health than non-teachers (both among non-teachers overall and in comparable occupations).

## **2. Background**

Organizational management scholars pointed to the possibly deleterious effects of occupational stress in the 1970's. This work centered on stress related to occupation-specific inputs and internal physiological and psychological responses to occupational tasks (Cox, 1975). Kyriacou and Sutcliffe (1978) developed a novel model of occupational stress in teaching that incorporated environmental stressors (e.g., the physical demands of managing a classroom or the psychological demands of performance assessments) and internal stressors (e.g., feeling a lack of autonomy) that underscored the potential for professions like teaching to create feedback loops of environmental and internal stressors. Consistent with this model, research on occupational stress has since established links between occupational stress and more severe outcomes such as anxiety, burnout, trouble sleeping, depression, and physical health decline (Ahola, Hakanen, Perhoniemi, & Mutanen, 2014; Ganster & Rosen, 2013).

Teachers, like many human service professionals, must manage and control their own emotional state while interfacing with multiple students – themselves in various states of emotional and physical need for reasons beyond teachers' control – for extended periods of time (Hochschild, 2012; Morris & Feldman, 1996). Teachers may be particularly sensitive to occupational stress as the people who select into teaching tend to be intrinsically motivated by the nature and purpose of the profession (Feldt et al., 2013; Holt, 2020; Tschannen-Moran, Hoy, & Hoy, 1998). Such intense identification with the occupation may lead to overcommitment and

particularly intense internal responses to perceived failure (e.g., students not seeming to respond to teachers or poor performance feedback from peers or test scores).

Alternatively, the gap in pay between teachers and other college-educated professionals (Allegretto & Mishel, 2016) may lead even intrinsically motivated teachers to feel additional stress, heightening their psychological responses to the job-related stressors inherent in teaching. Recent evidence from San Francisco suggests teachers facing high costs of living report more economic anxiety than teachers elsewhere, which fuels negative views of teaching and higher rates of absence (Dizon-Ross et al., 2018). Indeed, a variety of policy changes in the United States, at the state and federal level, increased the credentials required for teaching and added a variety of accountability measures tied to student achievement (Dee & Jacob, 2010; Firestone, 2014). Such changes may have intensified teachers' stress by increasing their workload, objectives and expectations and decreasing their perceived job security without a commensurate increase in pay (Ballet & Kelchtermans, 2009; Reback et al. 2014).

Researchers have long observed a large proportion of teachers reporting high stress levels (e.g., Farber, 1991). This is troubling because stress leads to other mental health issues like depression and anxiety (Chan, 1998), all of which predicts burnout (e.g., Montgomery & Rupp, 2005). The possibility that occupational stress drives poor mental health and eventual exit from the profession is troubling and may explain persistent issues recruiting and retaining teachers in the demanding environments that serve disadvantaged students (Lankford, Loeb, & Wyckoff, 2002). Worse, teachers struggling with mental health ailments, such as depression, likely harm student achievement (McLean & Connor, 2015). Given the link between teachers' school environment and depression (McLean, Abry, Taylor, Jimenez, & Granger, 2017), the relative mental health of teachers may play an important role in closing educational gaps.

Despite the importance of teacher mental health, both theoretically and empirically, we know relatively little about how teachers compare to other professions in terms of mental health outcomes in the United States. Van Droogenbroeck and Spruyt (2015) provide a thorough review of the literature on teachers' mental health and identify two studies of U.S. teachers that offer comparisons with workers in other professions. As they note, such comparisons serve an important function in assessing the extent to which mental health problems are unique to teaching or common to other human service professionals.

Using data from the Epidemiologic Catchment Area program (ECA), which includes data from 11,000 individuals from five community mental health catchment areas, Eaton and colleagues (1990) found K-12 teachers did not differ from average levels of depression across occupations. Similarly, Grosch and Murphy (1998) used data from the 1987 National Medical Expenditure Survey (NMES) and found only kindergarten teachers reported experiencing depression symptoms at higher rates than the average occupation. More recently, Woodward and colleagues (2017) used data from the 2005 and 2014 National Survey on Drug Use and Health to examine the proportion of respondents in each occupation who report a major depressive episode in the past year and the teaching profession is not among the 30 occupations with the highest rates of depressive episodes.

Of these studies, only Eaton et al. (1990) use longitudinal data, but they do not examine pre-labor market differences and their data are not nationally representative. We build on this existing literature in three important ways. First, we observe reported symptoms of depression for two nationally representative cohorts at multiple points in time, which allows us to compare teachers to non-teachers and mental health outcomes before, during, and after entering the workforce. Second, we compare two distinct cohorts of teachers, which allows us to observe

changes over time in the average mental health of teachers at the same point in their careers over time. Finally, we examine the extent to which mental-health gaps between teachers and non-teachers has changed over time.

### **3. Data**

We investigate changes in teachers' mental health over time and relative to other occupations using data from the National Longitudinal Survey of Youth (NLSY) 1979 and 1997 cohorts. The NLSY tracks a nationally representative sample of young people from late adolescence into adulthood, collecting data on a variety of characteristics and life events. Important for our purposes, both NLSY cohorts were asked items related to depression, taken from the Center for Epidemiologic Studies Depression Scale (CESD) for the 1979 cohort and the Mental Health Inventory (MHI) for the 1997 cohort, at multiple points in time. The CESD is a set of 20 items that measure both emotional and physical symptoms of depression and are used for assessing clinical depressive episodes. The MHI is a set of 38 items that measures psychological distress and well-being. Although the full set of CESD and MHI items is not asked for both cohorts, two of the three items that measure dysphoria, a key group of symptoms for depression in the CESD, are asked at multiple points in time in the 1979 cohort. These two items, regarding the frequency of feeling blue and feeling depressed, are also two of the five items used to measure depression in the MHI and observed at multiple points in time for the 1997 cohort. These two common items allow for comparisons across the 1979 and 1997 cohorts.

Because women make up the overwhelming majority of the teacher workforce (Guarino, Santibañez, & Daley, 2006), we restrict the analytic sample to women. We further restrict the analytic sample of women to women with a college degree, as the majority of K-12 classroom

teachers are required to have a college degree in these years. After selecting for complete cases on key observables, we use a final sample of 7,927 person-years, which includes 1,153 person-years of teachers during teaching (562 women) and 3,275 person-years (766 women) who serve as teachers at some point in the timeframe of each sample. The sample also includes 4,652 person-years of women who never teach (1,118 women).

### 3.1 *Dependent variables*

We measure respondents' mental health using two common items regarding depression and the blues from the dysphoria group of the CESD (NLSY79) and depression group of the MHI (NLSY97). The CESD was developed to provide a self-reported measure of symptoms of clinical depressive episodes to allow for the epidemiological study of psychiatric problems in the general population (Eaton et al., 2004; Radloff, 1977). The scale includes 20 items that measure 9 symptoms of a depressive episode. Items ask respondents to report the frequency with which they experience a symptom over a defined period of time using a 4-point response scale ranging from not at all (0) to nearly every day (3). The scale identifies a possible major depressive episode when people score 16 points overall *and* report dysphoria and anhedonia, two of the nine groups of symptoms measured in the scale, nearly every day plus any two of the other symptoms.<sup>4</sup> The NLSY asks the 1979 cohort two items from the dysphoria scale, the frequency

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<sup>4</sup> Interpretations of the scale includes categories “no clinical significance,” “subthreshold depression symptoms,” “possible major depressive episode,” “probable major depressive episode,” and “meets criteria for major depressive episode.” A diagnosis of “possible major depressive episode” involves a maximum score on the three dysphoria items (two of which are used for our study) and two other symptom groups. While the items common to both cohorts over time cannot identify diagnosed cases of depression, high scores on them provide suggestive evidence of possible depression. More information about the CESD can be found at <https://cesd-r.com/cesdr/>. The items used in the study for both cohorts can be found in appendix table A1.

of feeling blue and feeling depressed, in 1992, at age 40, and at age 50. Because survey respondents were of different ages in 1979, these questions were asked in different years depending on when the respondent turned 40 or 50.

Similarly, the MHI was developed in 1983 to measure psychological distress and well-being in general populations to support the epidemiological study of distress (Veit & Ware, 1983). The 38 items used to measure psychological distress draw on 5 dimensions, including depression.<sup>5</sup> The NLSY asks the 1997 cohort two items from the depression scale of the MHI, the frequency of feeling blue and feeling depressed, in 2004, 2006, 2008, 2010, and 2015. Notably, although the two cohorts use different scales to measure mental health, both cohorts are asked about “having the blues and feeling depressed,” which are two core items for measuring depression in both the CESD and MHI scales.

Following CESD protocol, each item is scored from 0 (not at all feeling blue or depressed) to 3 (feeling blue or depressed all the time). We sum scores on the two items to create an index that ranges from 0 to 6 points. A score of six points means that the person reports frequently feeling two symptoms of dysphoria, a core indicator of depressive episodes. While the measure is less precise than a full CESD or MHI scale, we focus on this measure because it is observed in both NLSY cohorts and at multiple points in time within each cohort.

### 3.2 *Independent variables*

We focus on the relative mental health of teachers both within the occupation over time and relative to other occupations. We identify teachers using the occupation codes provided by

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<sup>5</sup> The five dimensions of psychological distress and well-being measured in the MHI are anxiety, depression, loss of behavioral/emotional control, general positive affect, and emotional ties.

the NLSY. During each round of data collection, the NLSY asks respondents about up to five jobs the respondent has held over the past twelve months and codes the responses using the Census occupation coding scheme. We identify teachers using an indicator equal to 1 if the respondent reports working as a teacher at any point in the past twelve months. Following the Census codes used by the NLSY, we include prekindergarten and kindergarten, elementary, secondary, and special education teachers in our indicator identifying teachers.

We also compare teachers at different points in their careers within and across cohorts. After identifying women who work as teachers at any point in the NLSY timeframe, we define pre-service as the years before the first spell of teaching, in-service as the years a woman is working as a teacher, between service as the years a woman who eventually returns to teaching is not working as a teacher, and post-service years as the years after a woman leaves teaching and does not return.

Finally, we construct comparison groups of similar occupations, other female-dominated occupations, and women who do not enter the labor market. We consulted O\*NET, a database maintained by the Department of Labor that classifies occupations and industries according to knowledge, skills, and abilities needed for the occupation, to identify the occupations considered most similar to teaching. We use childcare providers (e.g., nannies, daycare workers) as one comparison occupation suggested by O\*NET, identified in the NLSY using the same occupation codes used to identify teachers.<sup>6</sup> We also follow prior work (e.g., Schaufeli, Daamen, & Van

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<sup>6</sup> The O\*NET provides comparison occupations for each Census occupation code; thus, comparison occupations are provided for each category of teacher (e.g., pre-kindergarten, kindergarten, elementary, etc.). Many of the top comparison occupations for each category of teacher are simply teachers at a different level (e.g., middle school teachers as a similar occupation to elementary school teachers). Some suggested comparison occupations, such as librarians and guidance counselors, are not observed frequently in the NLSY. The inclusion of these smaller categories does not alter the conclusions in our analysis – both have generally

Mierlo, 1994) by including another occupation dominated by women, nursing, as a comparison group. We identify stay-at-home parents using college-educated women who have children at some point in the NLSY timeframe but never report an occupation.<sup>7</sup> Finally, we include all college-educated women in the workforce at some point in the NLSY timeframe as an additional comparison group of workers with the same educational attainment as most teachers.

A variety of factors may influence teachers' mental health. First, as with other characteristics, people with differing latent predispositions for depression may systematically sort into teaching. We include controls for respondents' race, socioeconomic background (using parents' educational attainment), ability (using percentile on the AFQT for the 1979 cohort or ASVAB for the 1997 cohort), and lagged (pre-teaching) measures of depressive symptoms, as previously described.<sup>8</sup>

Second, respondents' mental health may be affected by a variety of family, economic, or life events. We account for these using indicators for marital status, highest degree completed by the respondent, the presence of a young child, and whether the respondent moved in the past year. We also account for the number of children in the respondent's household and the percent change in household income from the previous year, the latter of which accounts for recent income shocks to either the respondent or their spouse. We caution readers not to interpret our

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worse mental health outcomes than teachers – but have been omitted for clarity. Others, such as adult vocational teachers, are not separately identified in the coding scheme used in some years in the NLSY79 cohort and could not be examined.

<sup>7</sup> In our primary results, reported here, we restrict this group to women with a 4-year college degree or more. In figure A1, we provide the same analysis including all stay-at-home parents, regardless of educational attainment. The results do not change our conclusions but suggest a substantial difference in mental health between college educated stay-at-home parents and those with less education.

<sup>8</sup> The ASVAB and the AFQT are both standardized tests used by the armed forces to measure basic competency in core cognitive skills.

analysis as an investigation of the causal effect of teaching (or other factors) on mental health. Instead, we examine differential sorting on mental health into teaching and other predictors of mental health as a means to better understand the nature of the differences in mental health we observe across generations of teachers and between teachers and non-teachers.

## 4. Results

### *4.1 Distribution of Teacher's Mental Health Over Time*

Figure 1 compares the mental health of teachers within and across each cohort by their service status.<sup>9</sup> This yields several interesting facts.

[Insert Figure 1 about here]

First, both cohorts of teachers see an improvement in mental health, on average, during the years they teach. In the 1979 cohort, the average number of reported depression symptoms declines by 40% (from 0.81 to 0.48) and the difference is significant. In the 1997 cohort, the it decreases by 18% (from 1.24 to 1.01). In both cohorts, the change in mental health between pre-service and in-service years is statistically significant.

Second, comparing the average mental health of teachers at each career stage across cohorts suggests teachers in the 1997 cohort have significantly worse mental health than the previous generation both before they enter teaching and during their teaching years. Relative to the previous generation of teachers' pre-service years, the 1997 cohort of teachers score 53% higher on our mental health measure during their pre-service period. The large gap showing worse mental health among younger teachers holds when comparing measures of mental health

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<sup>9</sup> Appendix Table A2 summarizes mental health and selected individual characteristics of person-years from both cohorts, overall and separately by teaching status among women who eventually teach.

taken while women from both cohorts were in the teaching profession, but the gap between cohorts narrows in post-teaching years.

[Insert Figure 2 and Figure 3 about here]

Some of the differences between cohorts may be attributable to life-cycle differences in the person-years observed; specifically, while many of the post-service observations in Figure 1 for the 1979 cohort includes retirements, the 1997 cohort has not yet reached retirement age. Thus, post-service person-years in the younger cohort includes very different reasons for exiting teaching, such as termination, dissatisfaction with teaching, or the conclusion of a short-term appointment (e.g., Teach For America positions and other alternative paths to teaching). However, in 1992 (for the 1979 cohort) and 2010 (for the 1997 cohort), we observe the mental health status of both cohorts with a subset of respondents at the same age range (aged 27 to 30). Comparisons at this point allow us to make apples-to-apples comparisons between cohorts when respondents are at the same point in both their lifecycle and career. Consequently, post-service observations for both cohorts at this age would be due to early-career exits from teaching, while pre-service observations for both cohorts would be comparing women from both cohorts who enter teaching later in life (i.e., not immediately following college graduation in their early twenties).

Figure 2 reproduces the analysis in Figure 1 but restricts the sample to observations in 1992 (for the 1979 cohort) and observations in 2010 (for the 1997 cohort) who were between the ages of 27 and 30 years old in those years. Figure 2 provides a snapshot of mental health in relation to teacher service status for both cohorts at the same point in their respective lifecycles, allowing for a more apples-apples comparison of teacher mental health between the cohorts.

Figure 2 reinforces the patterns observed in figure 1 – teachers in the younger cohort report higher rates of depression symptoms than teachers in the previous generation *at the same age*.

Figure 3 shows regression-adjusted average mental health of teachers in both cohorts separately by their teaching service status, as in Figure 1. After accounting for age and years of teaching experience, the decline in depressive symptoms when transitioning from pre-service to in-service status reverses to a small, statistically insignificant increase in depressive symptoms for both cohorts. Moreover, the difference between 1979 cohort teachers and 1997 cohort teachers shrinks and becomes statistically insignificant once women begin teaching. However, pre-service teachers in the 1997 cohort still have significantly higher average depression symptoms than their pre-service teacher peers in the 1979 cohort reported at the same age. Together, the results in figure 3 suggest that women have worse mental health before entering teaching in the NSLY97 cohort and this pre-service difference drives much of the observed difference in teachers' mental health between the two cohorts. The cross-cohort gap in pre-service mental health could be due to a change in the women selecting into teaching over time or a difference between generations in mental health overall.

[Figure 4 and Figure 5 about here]

In addition to transitions into and out of teaching, teachers' mental health might change over time as the cohort ages or experiences year-specific policy or economic shocks. Figure 4 plots the average mental health of respondents who were teachers each year for both cohorts. These raw data show that the within-cohort evolution of mental health is fairly flat. However, this apparent stability over time within cohorts may be attributable to compositional changes in the cohort of teachers over time, as those with worse mental health might exit teaching early.

In Figure 5, we estimate the average mental health of each cohort at different stages in their teaching careers, again using regression adjustments to account for age effects. Figure 5 indicates that average teacher mental health in both cohorts is relatively constant within cohorts over the course of their careers. In the 1997 cohort, teachers have worse mental health than teachers in the 1979 cohort at the early stages of their teaching career, even after adjusting for age differences. In the first five years of teaching, teachers in the 1997 cohort score an average of 1.30 on our scale relative to 0.66 for the 1979 cohort teachers with similar teaching experience, and this difference is statistically significant. However, among very experienced teachers, the difference between the cohorts in mental health is imprecisely estimated and loses statistical significance. This is likely due to the relative youth of the 1997 cohort resulting in fewer teachers having 11 or more years of teaching experience.

These results provide two insights into changes in teachers' mental health over time. First, within cohorts, teachers' mental health is fairly stable over the course of their lifecycle. This means that on average, within cohorts, mental health did not change with teaching experience or year-specific aggregate shocks. Second, there is a significant between-cohort difference in teachers' mental health: Teachers in the more recent 1997 cohort have worse mental health than teachers in the 1979 cohort at every stage of the lifecycle / career.

#### *4.2. Comparing Teachers and Similar Non-Teachers' Mental Health*

Another key question surrounding teachers' mental health is how it compares to the mental health of female professionals in other occupations and of college-educated women who are not in the labor force. We begin by comparing the average mental health of women who eventually become teachers and college-educated women who never teach, again adjusting for age.

[Figure 6 and Figure 7 about here]

In Figure 6, we estimate the average mental health of women who become teachers during their pre-service years, college-educated women with children who do not enter the labor market, and college-educated women who work in other occupations. We adjust average mental health to account for age in all three groups. The comparison allows us to investigate the possibility that women with relatively worse mental health select into teaching in both cohorts.

Figure 6 shows a few interesting patterns in teachers' mental health. First, in the 1979 cohort, women who eventually became teachers did not report significantly more symptoms of depression *prior to entering teaching* than their college-educated, never-teacher peers (depression score of 0.59 versus 0.70 and 0.67 and not statistically significant). We find a similar lack of selection in the 1997 cohort comparing teachers and other college-educated workers (1.30 versus 1.39) and the difference between eventual teachers' and college-educated non-teachers' mental health is not statistically significant. Moreover, we see that eventual teachers in the 1997 cohort have significantly better mental health than their college-educated peers who leave the workforce for family reasons.

Figure 7, which restricts the sample to women who were aged 27 to 30 in both cohorts (in 1992 and 2010, respectively), shows that pre-service teachers in both cohorts at the same point in their lifecycle did not differ significantly from their college-educated non-teacher peers in terms of mental health status. Together, the results provide no evidence of women selecting into teaching having systematically worse mental health than women in their cohort who selected into other occupations (or out of the workforce to raise children). While women who become teachers in the 1997 cohort report significantly worse mental health *prior to teaching* than pre-service teachers in the 1979 cohort, the difference is attributable to worse mental health among all

women in the 1997 cohort rather than differentially worse mental health among eventual teachers.

[Figure 8 about here]

While the estimates in Figures 6 and 7 suggest that mental health does not significantly influence selection into teaching and Figures 4 and 5 suggest teachers' mental health remains stable over time within cohorts, that stability could be unique to teachers, as teaching is often considered a "safe" job with stable pay. Figure 8 investigates this question by plotting the gap in average mental health between teachers and non-teachers by year and by cohort. The figure suggests that the gap between teachers and non-teachers in overall mental health decreased across cohorts. In the 1979 cohort, teachers report fewer depression symptoms, on average, than their non-teaching cohort peers. In the 1997 cohort, the mental health gap still favors teachers, but the gap shrinks considerably and becomes statistically insignificant in 2015 when respondents are 30 to 35 years old.

[Figure 9 and Figure 10 about here]

The teacher and non-teacher comparisons in Figure 8 may be comparing teachers to women in vastly different occupations who have fundamentally different temperaments, preferences, and lifestyles. To better understand the possible influence of teaching on mental health, we compare teachers to women in arguably similar occupations: childcare workers, college-educated stay-at-home parents, nurses, and college-educated women in the workforce in all other occupations, as previously described. Figure 9 indicates that teachers in the 1979 cohort report lower rates of depression symptoms than both their most similar labor market peers and the women in their cohort who exited the labor market for family reasons. The large drop in depression symptoms among childcare workers in the mid-2000s is attributable to sample size

changes, as a much smaller proportion of respondents who turned forty in those years reported working as childcare providers. Figure 10 suggests that among women in the 1997 cohort, teachers report strikingly similar rates of depression symptoms to their closest comparison peers.

Comparisons between teachers and non-teachers across the two cohorts yields two important findings. First, we see little evidence that teachers suffer from worse mental health outcomes than similarly educated non-teachers or women in comparable occupations in either cohort. In both cohorts, teachers report equivalent or fewer depression symptoms than their peers in other occupations. However, while teachers in the 1979 cohort had significantly better mental health than non-teachers over time, the gap between teachers and non-teachers is smaller and statistically insignificant in the 1997 cohort. Second, we find no evidence in either cohort of women with systematically better or worse mental health prior to teaching selecting into the teaching profession. The lack of selection on pre-service mental health suggests that the better mental health observed among in-service teachers in the 1979 cohort is not attributable to pre-existing mental health differences among women who become teachers.

#### 4.3 *Predicting Mental Health*

[Table 1 about here]

A variety of life events and personal circumstances might influence mental health. We investigate some possible predictors of mental health using descriptive regressions to examine the effect of various factors on mental health at different points in time for each cohort.<sup>10</sup> In our regressions, the outcome in the 1979 cohort is our mental health index in 1992, at age 40, and at

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<sup>10</sup> All regressions are weighted using BLS provided sampling weights. Inference is made using robust standard errors.

age 50. We control for observable characteristics, adult life events (e.g., getting married/divorced, having children, moving, changes in household income), years of experience teaching, years since exiting teaching, and lagged measures of mental health (when available). We estimate the same regressions for the 1997 cohort for mental health in 2008, 2010, and 2015. Finally, we estimate the model for both cohorts on the subsample of women who complete a 4-year college degree or more in our sample frame.<sup>11</sup>

Table 1 shows estimates of our descriptive regressions of mental health among the 1979 cohort of women in 1992, when the cohort of women were aged 27 to 35 years old, 5 to 13 years later at age 40, and again at age 50. Perhaps unsurprisingly, higher household income corresponds with lower levels of depression throughout the lifecycle (see, for instance, Jebb et al., 2018, who show a positive link between income and happiness). Meanwhile, marriage and children appear to play significant roles in mental health. While early in life, those without children are more depressed than those with children, the effect of not having children on mental health is less prevalent later in life (again, consistent with panel data showing short-run, positive effects of children on happiness, e.g., Samoilova & Vance, 2015). Relative to unmarried women, women who are married or divorced are less depressed at age 50. This result is also consistent with the persistent, positive association between marriage and subjective well-being conditional on the quality of the relationship (see Perelli-Harris et al., 2019). Finally, the gap in mental health between teachers and non-teachers becomes statistically significant at age 50, even after accounting for prior mental health status.<sup>12</sup>

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<sup>11</sup> Results of regressions on the full sample of women, regardless of ultimate educational attainment, are quite similar and are available upon request.

<sup>12</sup> Although we control for years since exiting teaching, the gap may be attributable to compositional changes in the teaching workforce over time (i.e., less happy teachers exiting the profession). Ideally, we could investigate mental health differences between those who exit the

[Table 2 about here]

Table 2 replicates the same analysis on women in the 1997 cohort. We examine predictors of health for women in this cohort in 2008 (ages 23 to 28), 2010 (ages 25 to 30), and 2015 (ages 30 to 35). In the 1997 cohort, we can see some differences in the factors associated with mental health in early adulthood. For instance, among the 1997 cohort of women, household income is less consistently predictive of mental health status. Meanwhile, higher depression rates among those who are not married and those who have no children resembles the patterns observed in the 1979 cohort of women.

Consistent with the average differences reported previously, the estimated gap between teachers and non-teachers is small and not statistically significant. However, while the association between years teaching and mental health is small and insignificant in the 1979 cohort, the relationship becomes positive and statistically significant in the 1997 cohort. In 2010, when most women in the cohort are in their mid- to late-twenties, an additional year spent teaching corresponds with a 0.03 point higher score on the depression scale on average.

Overall, the results suggest that family formation (marriage and having children) is the most significant determinant of mental health in both cohorts of women. In both cohorts, women in their early- to mid-thirties without children were more depressed than their otherwise similar peers, but this effect fades later in life, at least among women in the 1979 cohort. More important for our purposes, even after accounting for differences in observable characteristics, prior mental health status, and other important life circumstances, teachers in both cohorts reported mental

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profession and those who stay with mental health collected at a high frequency over time. Unfortunately, the NLSY79 only provides measures of mental health. The combination of infrequent measurement and a relatively small sample of teachers precludes our ability to assess compositional effects on average teacher mental health measures.

health status equal to or better than their non-teaching peers. Finally, while tenure in teaching does not correlate with mental health status for teachers in the 1979 cohort, tenure in teaching corresponds with *higher* depression scores among early career women in the 1997 cohort. Still, the weight of evidence in our descriptive models suggests factors beyond occupation are the primary determinants of mental health status.

## **5. Discussion and Conclusions**

Despite common anecdotes in popular press accounts that teaching remains a uniquely stressful occupation, we find little evidence that teachers differ in their mental health outcomes from women in other professions or women who opt-out of the labor market to raise a family. Although we find some evidence of declining average mental health between the 1979 cohort of teachers and the 1997 cohort of teachers, the mental health gap between teachers and non-teachers *within* each generation remains small or even favors teachers. Of course, our results do not imply that teachers do not face stressful jobs or are immune to stress, depression, and burnout – just that occupational stress is not unique to the teaching profession.

It is also true that several limitations of our data and methodological approach merit consideration when making policy decisions and conducting future research on the topic. First, the NLSY79 and NLSY97 studies focused on gathering data from nationally representative cohorts on a range of outcomes and were not explicitly designed for studying teachers. While the design allows for comparisons between peers as they progress through their lives and professional careers, the design yields relatively small samples of teachers. Similarly, since both cohort studies focus on a range of outcomes beyond mental health, data on mental health is less frequent and measured with different scales, necessitating the use of a subscale common to both

cohorts. Future work should measure mental health more frequently, more precisely, and track larger samples of teachers over time.

Second, we lack data on the schools at which the women in our samples teach. While teachers, on average, exhibit similar mental health to women in other professions, there may be considerable variation within the teaching profession related to the school climate. We also lack information related to teacher effectiveness. These gaps in our data leave open questions related to how school environments and education policies affect teachers' mental health, how teachers' mental health shapes their job performance, how the interaction between mental health and effectiveness affects turnover, whether there are peer effects of poor mental health on other teachers' mental health or effectiveness, and how all of this compares to other professions. We necessarily leave these important questions to future research.

These limitations and opportunities for future work aside, the current study documents a clear shift in the relative mental health outcomes of teachers across generations. While women who became teachers in the 1979 cohort have slightly *better* mental health outcomes than their non-teaching peers, teachers in the current generation do not differ from their peers. The reasons for this generational shift in the mental health of teachers are not clear, and future research should investigate this shift further. Perhaps increases in the use of test-based accountability in recent decades have substantially changed the teaching profession for young teachers, while older teachers still in the workforce remain insulated from these effects through tenure protections. Perhaps the experience of the Great Recession altered the link between occupational experiences and mental health for the younger generation. Acknowledging that teachers do not exhibit uniquely poor mental health, future work should focus on that factors within the

profession that impact teachers' mental health and test the link between mental health and job performance among teachers.

As for addressing the problem, our results align with broader work suggesting that mental health is an important concern that should be addressed for all workers in all professions (Frank & McGuire 2000). There is a shortage of mental health workers and supports in many parts of the U.S. and throughout the world, particularly in low- and middle-income areas (Kakuma et al. 2011). This is a troubling, but fixable, problem. A body of rigorous evidence is accumulating on how employers can best support the mental health of their employees. Person-directed burnout prevention interventions improve mental health in the short term, and when coupled with organization-directed interventions can yield long lasting improvements in mental health (Awa et al. 2010). There is much here that schools can learn and borrow from.

Mindfulness-based interventions (MBI) are another evidence-based approach to reducing stress, anxiety, depression, and burnout among employees (Janssen et al. 2018). These interventions teach mindfulness skills and coping strategies, such as meditation, and have been shown to be similarly effective among teachers and in other occupations (Klingbeil & Renshaw 2018; Lomas et al. 2017), which makes sense given the similarities we find in mental health across occupations in the NLSY 79 and 97. For example, a small-scale RCT of 59 public school teachers by Taylor et al. (2016) found that an MBI reduced teachers' stress levels. Importantly, Sharplin et al. (2011) review the coping mechanisms commonly used by teachers and find that interventions are particularly important at three specific time periods: the first week or two in a new teaching position, the first semester, and three to four months before the end of the school year. Schools and districts have much to adopt and adapt from the mindfulness and burnout literatures, which have field tested interventions among teachers and other professionals.

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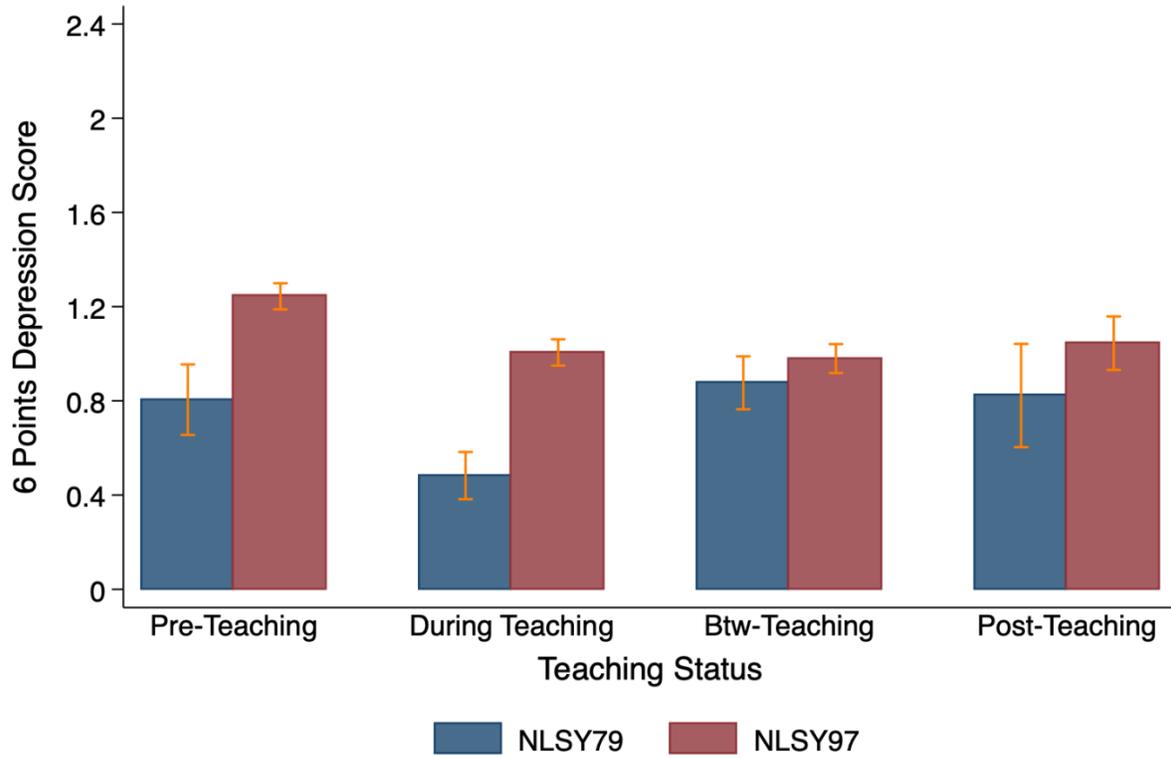
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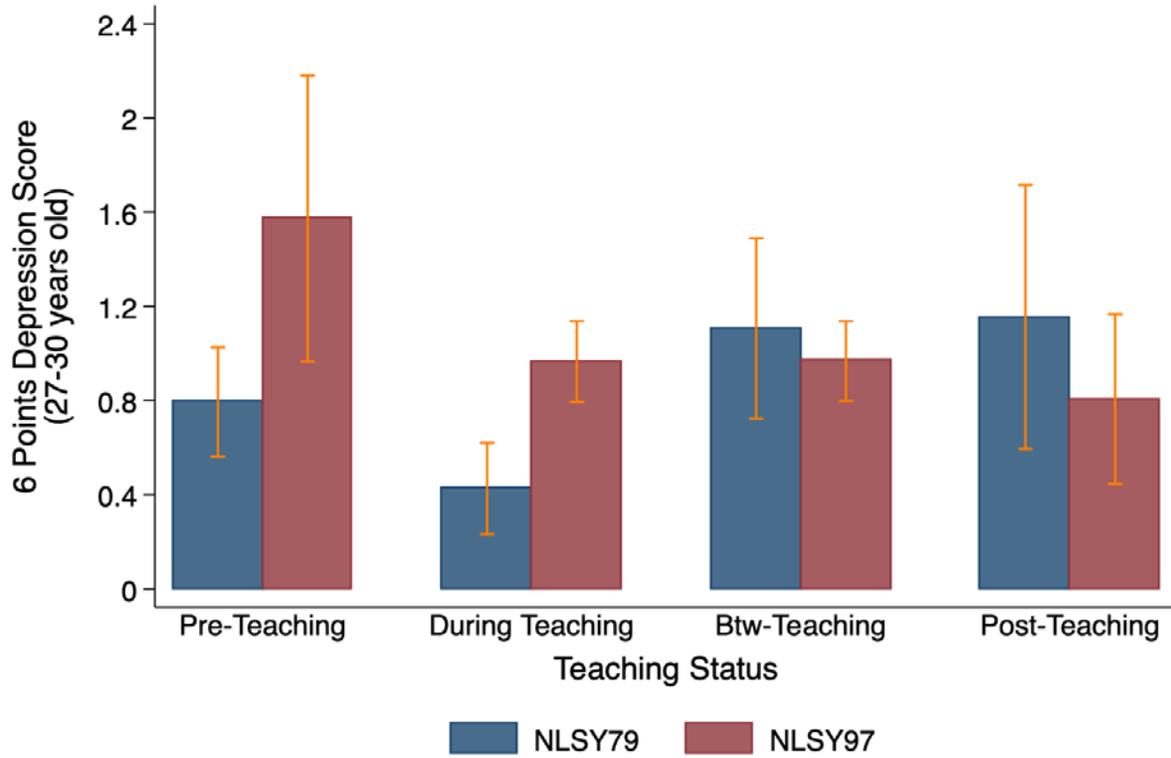
## Figures and Tables

Figure 1. Score on core depression items for women who taught by cohort and by teaching service status



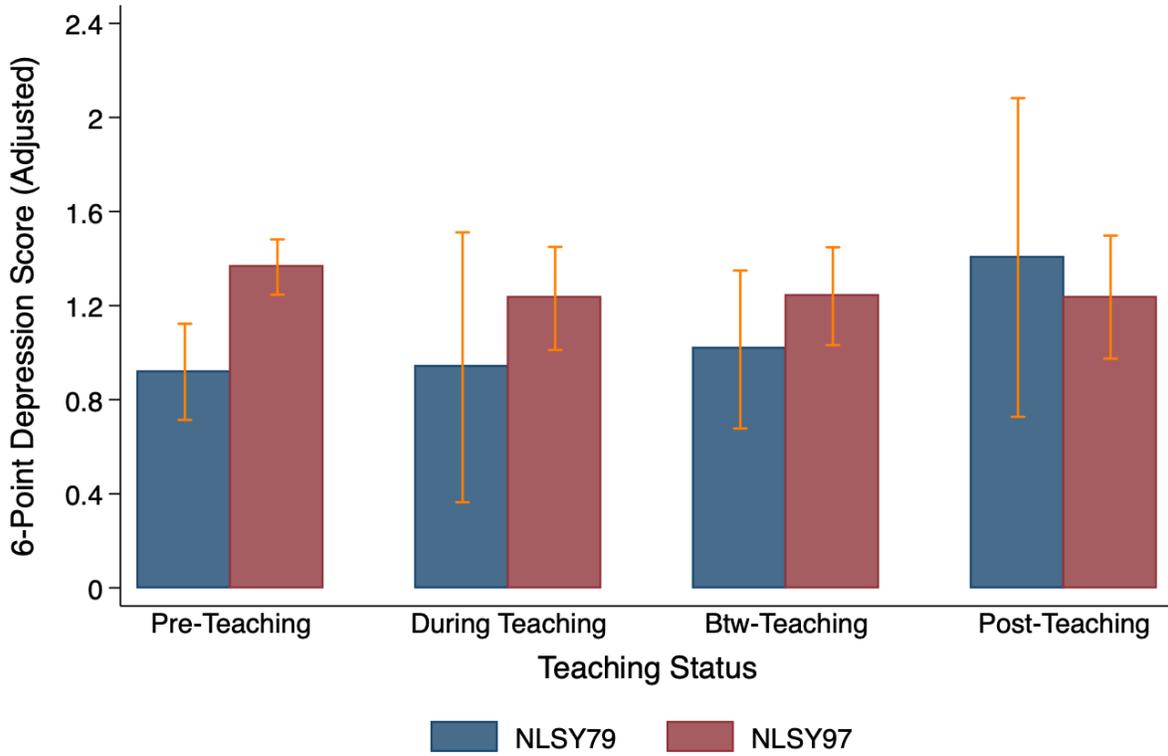
Note: Weighted using BLS provided sampling weights. Caps represent 95% confidence intervals. Averages calculated using person-year unit of observation.

Figure 2. Score on core depression items for women who taught by cohort and by teaching service status, age 27-30



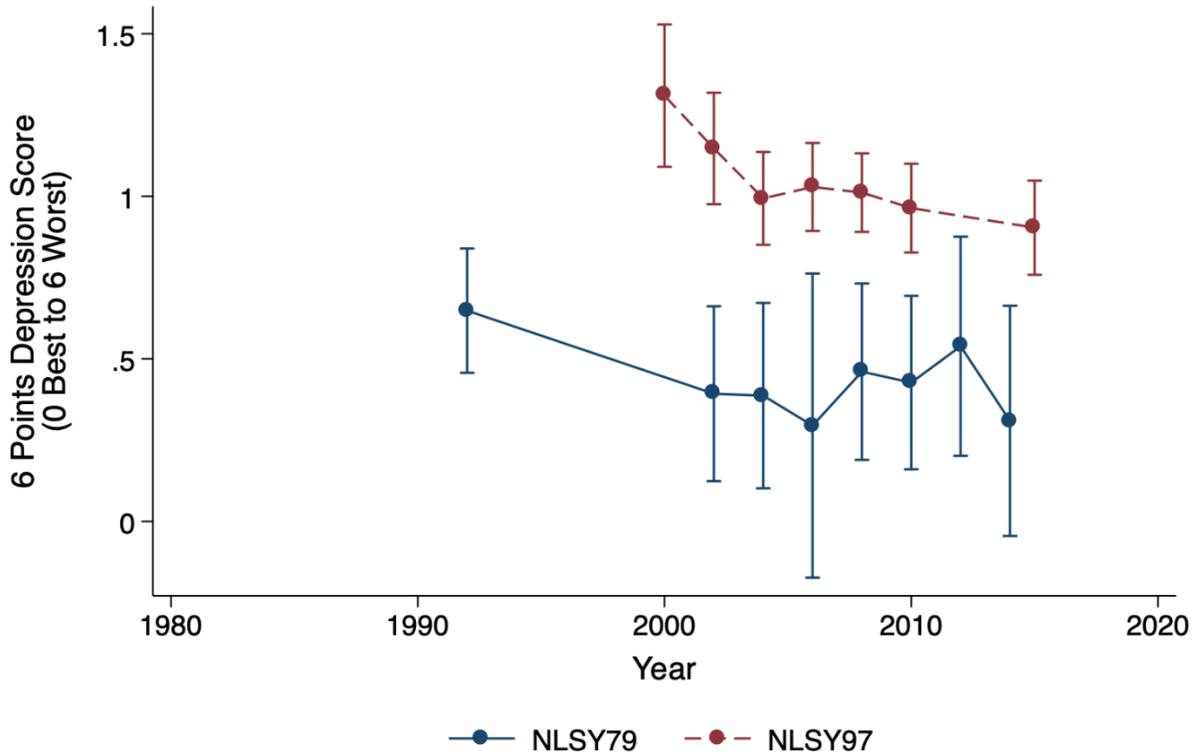
Note: Weighted using BLS provided sampling weights. Caps represent 95% confidence intervals. Averages calculated using person-year unit of observation. Restricted to women who teach at some point in our frame and are between 27 and 30 years old in 1992 (NLSY79 cohort) or 2010 (NLSY97 cohort). Provides a comparison of teachers in each cohort at a comparable age.

Figure 3. Regression adjusted score on core depression items for women who taught by cohort and by teaching service status



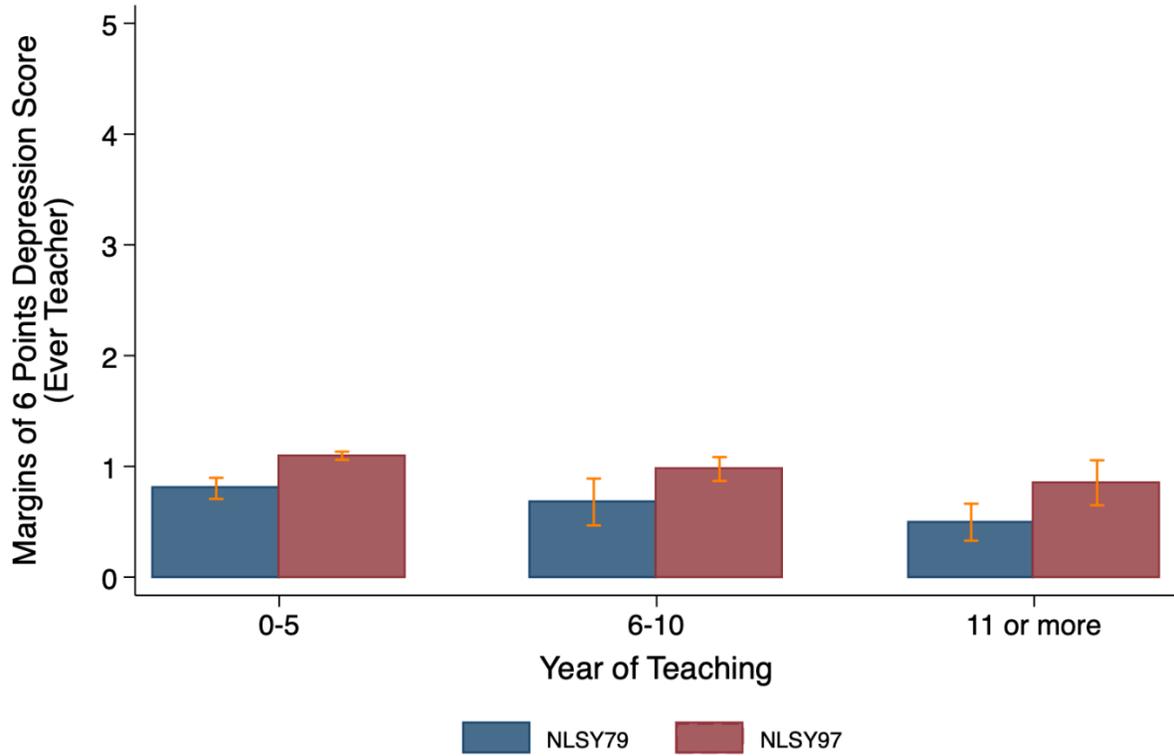
Note: Weighted using BLS provided sampling weights. Caps represent 95% confidence intervals. All adjustments made using person-year observations. Pre-teaching period adjusted using de-meanned age. Teaching period adjusted using de-meanned age and years of teaching experience. Between- and post-teaching periods adjusted using de-meanned age, years of teaching experience, and years since exit from teaching. Caps represent 95% confidence intervals.

Figure 4. Score on core depression items among teachers over time, by cohort (6-point scale)



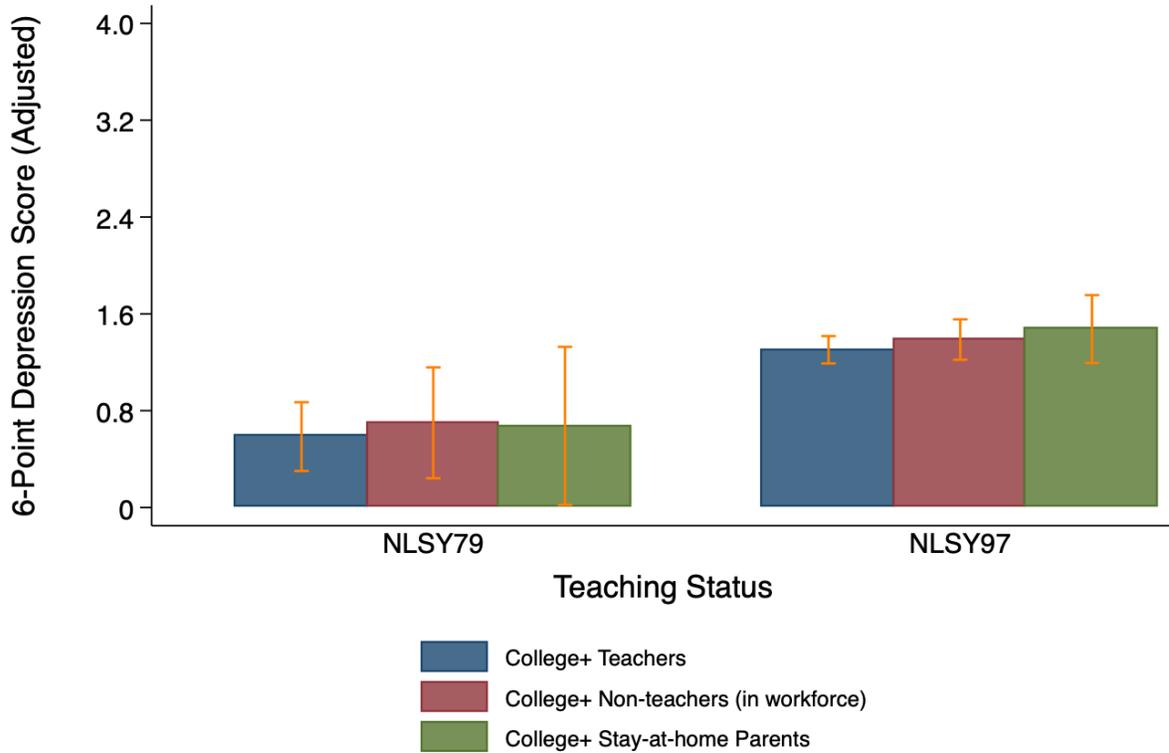
Note: Plot is person-year specific and depicts the average core depression score among females who were teachers in a given year for each cohort. Higher scores indicate a person is more likely to be depressed. Smaller scale was used for comparability across cohorts. Plot is weighted using BLS provided sample weights. Caps represent 95% confidence intervals.

Figure 5. Score on core depression items among teachers over time spent teaching, by cohort (6-point scale)



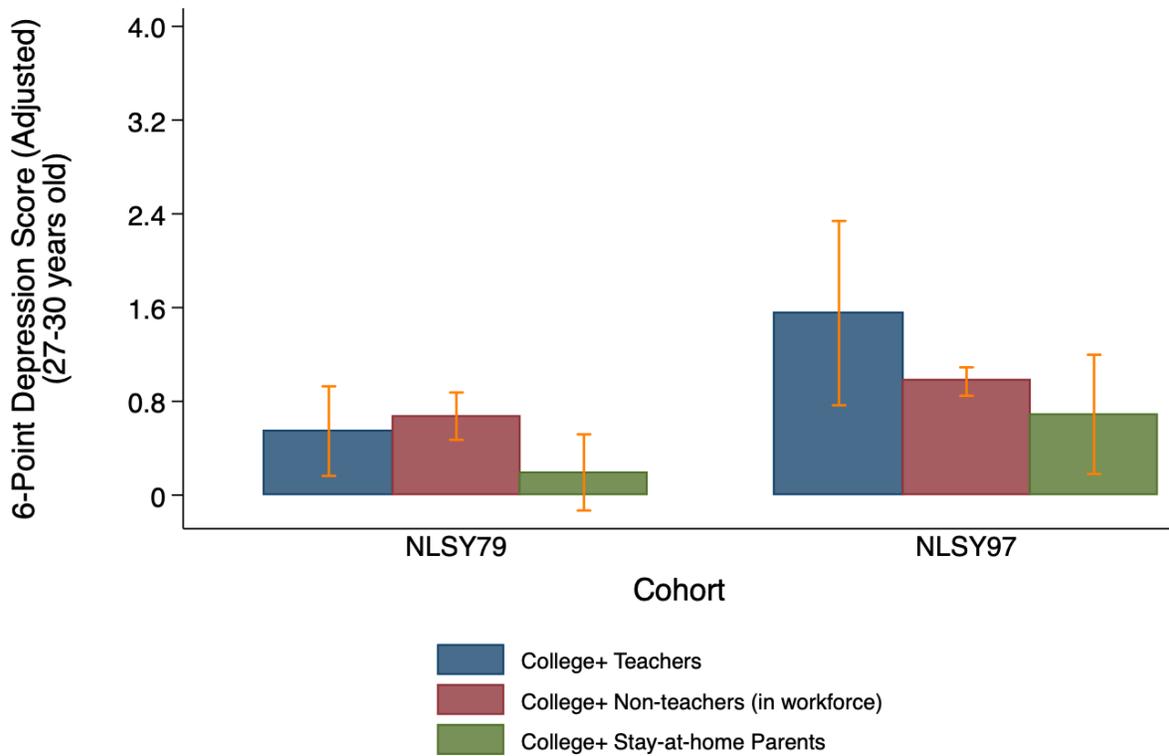
Note: Plot is person-year specific and depicts the average core depression score among females who ever worked as teachers in our sample timeframe for each cohort. Higher scores indicate a person is more likely to be depressed. Smaller scale was used for comparability across cohorts. Plot is weighted using BLS provided sample weights. Caps represent 95% confidence intervals.

Figure 6. Score on core depression items comparing mental health among pre-service teachers and non-teachers, by cohort and adjusted for age (6-point scale)



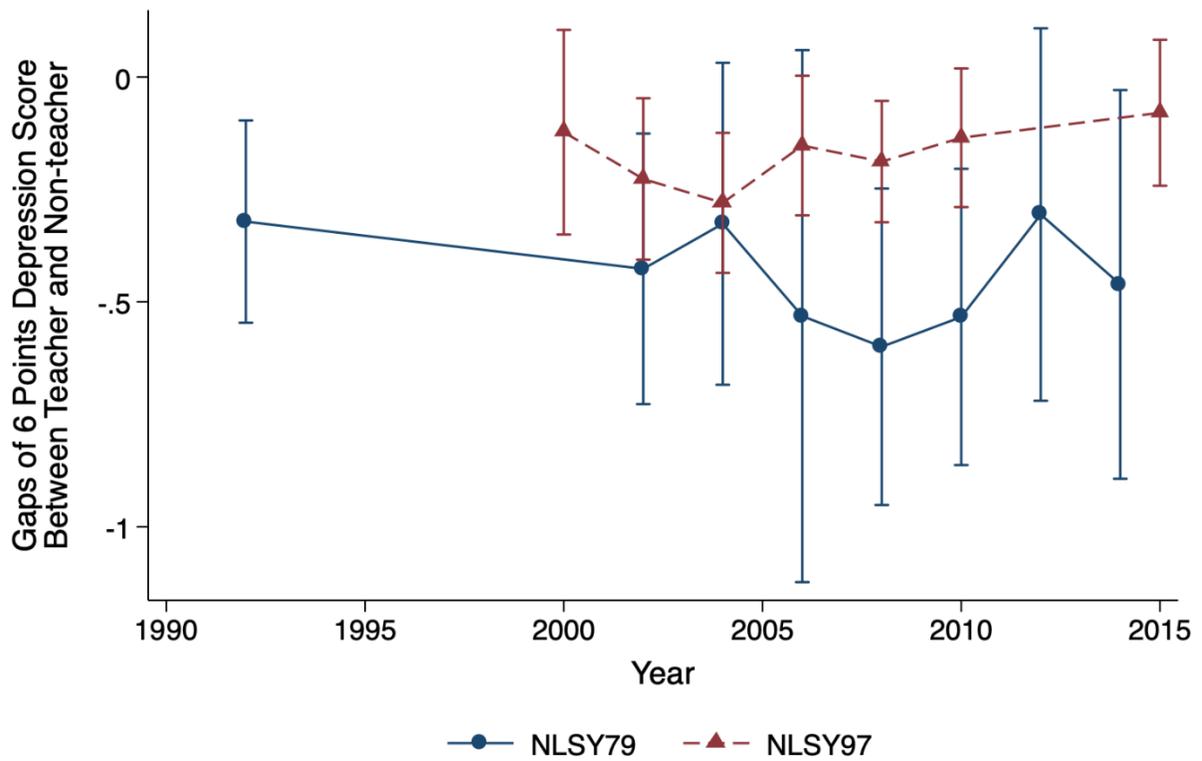
Note: Plot is person-year specific and depicts the average core depression score among women who are pre-service teachers and women who never teach in each cohort. The sample is restricted to women who obtain a 4-year college degree within the timeframe of the study. The average is adjusted for age using de-meanned age. Higher scores indicate a person is more likely to be depressed. Smaller scale was used for comparability across cohorts. Plot is weighted using BLS provided sample weights. Caps represent 95% confidence intervals.

Figure 7. Score on core depression items comparing mental health among pre-service teachers and non-teachers, by cohort and adjusted for age (6-point scale) for women aged 27-30.



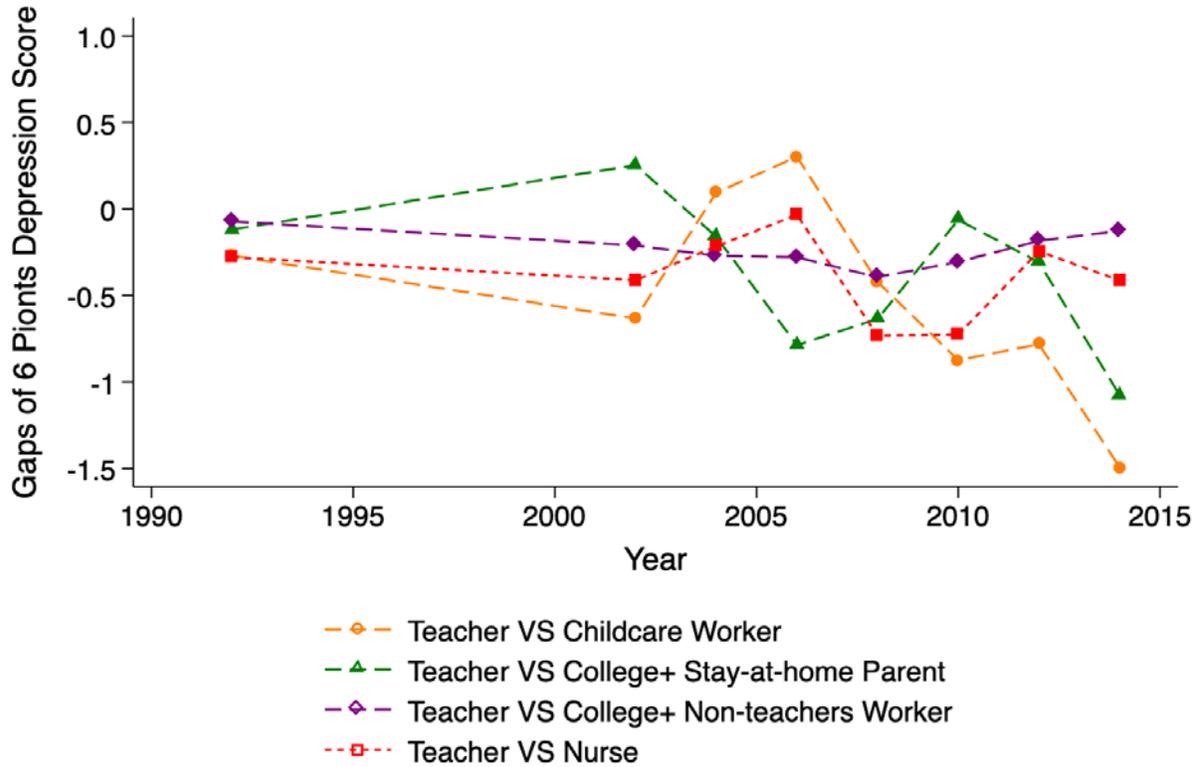
Note: Weighted using BLS provided sampling weights. Caps represent 95% confidence intervals. Averages calculated using person-year unit of observation and adjusted using de-meaned age. Restricted to women who are between 27 and 30 years old in 1992 (NLSY79 cohort) or 2010 (NLSY97 cohort) and women who obtain a 4-year college degree within the timeframe of the study. Provides a comparison of teachers in each cohort at a comparable age.

Figure 8. Score on core depression items among teachers over time, by cohort and by teacher status (6-point scale)



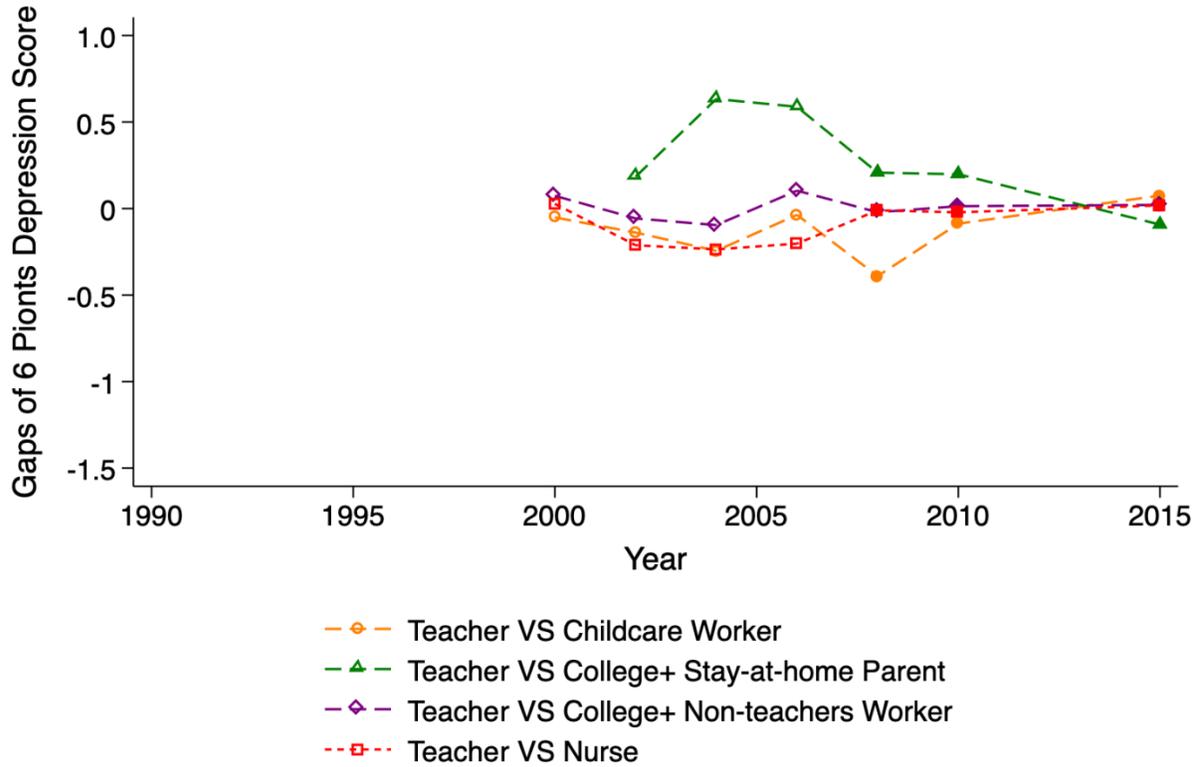
Note: Plot is person-year specific and depicts the difference in the average core depression score between women who were teachers and women who were not teachers in a given year for each cohort. Higher scores indicate teachers were more depressed than non-teachers on average in a given year. Smaller scale was used for comparability across cohorts.

Figure 9. Score on core depression over time, NLSY79 (6-point scale).



Note: Plot is person-year specific and depicts the difference in the average core depression score between women who were teachers and women in the specified occupation in a given year for each cohort. Higher scores indicate teachers were more depressed than the comparison occupation on average in a given year. Smaller scale was used for comparability across cohorts. Plot is weighted using BLS provided weights.

Figure 10. Score on core depression over time, NLSY97 (6-point scale).



Note: Plot is person-year specific and depicts the difference in the average core depression score between women who were teachers and women in the specified occupation in a given year for each cohort. Higher scores indicate teachers were more depressed than the comparison occupation on average in a given year. Smaller scale was used for comparability across cohorts. Plot is weighted using BLS provided weights. Circles become filled when the majority of respondents in the cohort reached college-graduation age (25). All observations of stay-at-home parents who graduate from college are missing core depression measures in year 2000.

Table 1. Descriptive regressions of teachers' mental health, NLSY79 cohort, weighted.

	1992	Age 40	Age 50
	(1)	(2)	(3)
Current teacher	-0.31 (0.22)	-0.16 (0.14)	-0.47** (0.21)
Depression 1992	-	0.22*** (0.06)	0.29*** (0.07)
Depression at 40	-	-	0.31*** (0.09)
Age	0.02 (0.02)	-0.04 (0.05)	-0.12 (0.08)
Hispanic	0.12 (0.17)	-0.10 (0.21)	-0.14 (0.19)
Black	-0.10 (0.14)	-0.00 (0.17)	-0.39* (0.21)
Teaching experience (yrs.)	0.04 (0.03)	0.00 (0.01)	0.01 (0.01)
Years since exit teaching	0.01 (0.02)	0.01 (0.01)	-0.00 (0.01)
Mother College+	0.00 (0.13)	0.14 (0.13)	0.44** (0.22)
Father College+	0.09 (0.11)	-0.14 (0.11)	0.13 (0.16)
Married	-0.25* (0.14)	-0.04 (0.18)	-0.76** (0.31)
Divorced	0.16 (0.20)	0.01 (0.21)	-0.63** (0.32)
Age of youngest child	0.02 (0.02)	0.00 (0.01)	-0.00 (0.01)
HH children	0.06 (0.06)	-0.15** (0.07)	-0.03 (0.08)
No child	0.34* (0.20)	-0.30 (0.28)	-0.41 (0.44)
College or More	0.13 (0.11)	0.26** (0.13)	-0.46 (0.53)
% Change of HH income	-0.00** (0.00)	-0.00*** (0.00)	-0.00** (0.00)
Moved	-	-0.21 (0.14)	-0.08 (0.24)
AFQT Score	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Year FE	N/A	Yes	Yes
Adjusted R2	0.02	0.07	0.18
Observations	934	516	461

Note: Robust standard errors in parentheses; \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.10. CESD lags not available for 1992. HH = Household; College+ = 4-year college degree or more. Restricted to women who obtain at least a 4-year college degree.

Table 2. Descriptive regressions predicting mental health, NLSY97 cohort, weighted.

	2008	2010	2015
	(1)	(2)	(3)
Current teacher	0.06 (0.10)	-0.10 (0.12)	-0.03 (0.13)
Depression in 2008	-	0.31*** (0.05)	0.16*** (0.04)
Depression in 2010	-	-	0.18*** (0.04)
Depression in 2004	0.19*** (0.04)	0.15*** (0.04)	0.12*** (0.04)
Depression in 2006	0.26*** (0.04)	0.17*** (0.05)	0.03 (0.04)
Age	0.01 (0.02)	0.04* (0.02)	0.02 (0.02)
Hispanic	-0.07 (0.12)	0.10 (0.10)	-0.06 (0.12)
Black	0.17* (0.10)	0.02 (0.09)	0.07 (0.11)
Teaching experience (yrs.)	-0.01 (0.02)	0.03** (0.02)	0.01 (0.01)
Years since exit teaching	0.00 (0.02)	-0.01 (0.01)	-0.00 (0.01)
Mother College+	-0.03 (0.07)	0.00 (0.07)	0.02 (0.07)
Father College+	-0.01 (0.07)	0.04 (0.07)	0.02 (0.07)
Married	-0.16** (0.08)	-0.10 (0.08)	-0.00 (0.09)
Divorced	-0.03 (0.19)	-0.16 (0.15)	0.60** (0.25)
Age of youngest child	0.04* (0.02)	0.02 (0.02)	0.01 (0.01)
HH children	0.03 (0.09)	-0.04 (0.06)	0.16*** (0.05)
No child	0.31 (0.20)	0.16 (0.16)	0.53*** (0.13)
College or More	-0.11 (0.09)	0.04 (0.11)	0.09 (0.15)
% Change of HH income	-0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)
Moved	-0.12* (0.07)	0.18** (0.08)	-0.02 (0.07)
ASVAB Score	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Adjusted R2	0.18	0.27	0.20
Observations	767	739	669

Note: Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . HH = Household; College+ = 4-year college degree or more. Restricted to women who obtain at least a 4-year college degree.

## Appendix

Table A1. Comparison of items measuring mental health

Source	Scale	NLSY Variable Label	Question wording	Response Options
NLS Y79	CE SD	CES-D Depression - Could not shake blues (CESD)	DURING THE PAST WEEK... I felt I could not shake off the blues, even with the help of my family or friends...	0 Rarely or none of the time/1 day 1 Some/A little of the time/1-2 days 2 Occasionall y/Moderate amount of time/3-4 days 3 Most/All of the time/5-7 days
		CES-D Depression - Depressed (CESD)	I felt depressed.	1 All of the time 2 Most of the time 3 Some of the time 4 None of the time
NLS Y97	M HI	HOW OFTEN R FELT DOWN OR BLUE IN PAST MONTH	How much of the last month have you felt downhearted and blue?	
		HOW OFTEN R DEPRESSED IN LAST MONTH	How much of the time during the last month have you felt so down in the dumps that nothing could cheer you up?	

Table A2. Descriptive characteristics of females who ever worked as teachers, separately by cohort and teaching years.

	Cohort 79						Cohort 97					
	Never T	Ever T	Pre-T	During T	Post-T	Btw-T	Never T	Ever T	Pre-T	During T	Post-T	Btw-T
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CESD 6pt	0.91 <sub>a</sub> (1.53)	0.74 <sub>a</sub> <sup>***</sup> (1.37)	0.81 <sub>a</sub> (1.35)	0.48 <sub>a</sub> <sup>***</sup> (1.11)	0.88 <sub>c</sub> (1.52)	0.82 <sub>c</sub> (1.32)	1.25 (1.11)	1.08 <sup>***</sup> (0.97)	1.24 (1.02)	1.01 <sup>***</sup> (0.90)	0.98 <sup>***</sup> (0.99)	1.04 <sup>**</sup> (0.75)
Race: Hispanic	0.06 <sub>a</sub>	0.05 <sub>a</sub>	0.05 <sub>a</sub>	0.04	0.06 <sub>c</sub>	0.05	0.11	0.08 <sup>***</sup>	0.10	0.06 <sup>***</sup>	0.09 <sup>*</sup>	0.02 <sup>***</sup>
Race: Black	0.12 <sub>c</sub>	0.12	0.16 <sub>b</sub> <sup>**</sup>	0.11	0.11	0.13	0.13	0.12	0.11	0.13	0.14	0.12
Race: Other (include White)	0.82 <sub>a</sub>	0.83 <sub>b</sub>	0.79	0.85 <sub>c</sub>	0.82 <sub>b</sub>	0.82	0.77	0.80 <sup>***</sup>	0.79 <sup>*</sup>	0.81 <sup>***</sup>	0.78	0.87 <sup>***</sup>
Age	40.30 <sub>a</sub> (8.53)	40.74 <sub>a</sub> <sup>*</sup> (8.49)	32.96 <sub>a</sub> <sup>***</sup> (5.27)	41.98 <sub>a</sub> <sup>***</sup> (8.22)	43.84 <sub>a</sub> <sup>***</sup> (7.65)	35.53 <sub>a</sub> <sup>***</sup> (6.76)	23.83 (4.87)	23.99 <sup>*</sup> (4.84)	20.03 <sup>***</sup> (3.03)	25.25 <sup>***</sup> (4.25)	27.18 <sup>***</sup> (4.22)	23.48 (3.06)
Education College+	0.20	0.59 <sub>a</sub> <sup>***</sup>	0.34 <sub>a</sub> <sup>***</sup>	0.82 <sub>a</sub> <sup>***</sup>	0.52 <sup>***</sup>	0.64 <sub>a</sub> <sup>***</sup>	0.20	0.41 <sup>***</sup>	0.12 <sup>***</sup>	0.63 <sup>***</sup>	0.52 <sup>***</sup>	0.37 <sup>***</sup>
Mother Education College+	0.09 <sub>a</sub>	0.17 <sub>a</sub> <sup>***</sup>	0.14 <sub>a</sub> <sup>***</sup>	0.17 <sub>a</sub> <sup>***</sup>	0.18 <sub>a</sub> <sup>***</sup>	0.18 <sub>b</sub> <sup>***</sup>	0.21	0.35 <sup>***</sup>	0.34 <sup>***</sup>	0.37 <sup>***</sup>	0.34 <sup>***</sup>	0.29 <sup>**</sup>
Father Education College+	0.15 <sub>a</sub>	0.29 <sub>a</sub> <sup>***</sup>	0.24 <sub>a</sub> <sup>***</sup>	0.35 <sup>***</sup>	0.27 <sub>a</sub> <sup>***</sup>	0.30 <sup>***</sup>	0.24	0.35 <sup>***</sup>	0.35 <sup>***</sup>	0.37 <sup>***</sup>	0.33 <sup>***</sup>	0.34 <sup>***</sup>
Test Score Percentile	49.71 <sub>a</sub> (27.43)	60.65 <sub>a</sub> <sup>***</sup> (26.92)	55.59 <sub>a</sub> <sup>***</sup> (28.33)	65.52 <sup>***</sup> (24.37)	58.89 <sub>a</sub> <sup>***</sup> (27.91)	62.25 <sup>***</sup> (24.91)	53.07 (27.99)	63.28 <sup>***</sup> (24.98)	59.83 <sup>***</sup> (23.99)	65.02 <sup>***</sup> (23.58)	64.80 <sup>***</sup> (26.76)	66.54 <sup>***</sup> (26.22)
N	6829	1641	317	477	706	141	10441	3481	1315	999	999	168

Note: Standard deviations in parentheses; \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.10 for t-test of difference in means between ever teacher columns (before, during, and after) and rest of females in cohort; a p < 0.01, b p < 0.05, c p < 0.10 for t-test of difference in means across cohorts for corresponding columns (1 and 5, 2 and 6, 3 and 7, 4 and 8). T = Teacher. Test score percentile indicates the percentile score on the AFQT for the 1979 cohort and the ASVAB for the 1997 cohort.

Table A3. Descriptive characteristics of females who were ever teachers and were between 27 and 30 years old in 1992 or 2010, by cohort.

	Cohort 79						Cohort 97					
	Never T	Ever T	Pre-T	During T	Post-T	Btw-T	Never T	Ever T	Pre-T	During T	Post-T	Btw-T
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CESD 6pt (1992,2010)	0.96 <sub>a</sub> (1.48)	0.83 <sub>c</sub> (1.41)	0.79 <sub>b</sub> (1.34)	0.43 <sub>a</sub> <sup>***</sup> (0.84)	1.11 (1.68)	1.15 (1.70)	1.15 (1.12)	1.00 <sup>**</sup> (1.03)	1.57 <sup>*</sup> (1.40)	0.97 <sup>*</sup> (0.94)	0.97 <sup>*</sup> (1.05)	0.81 (0.77)
Race: Hispanic	0.06 <sub>a</sub>	0.05	0.05	0.04	0.07	0.06	0.11	0.07 <sup>*</sup>	0.12	0.05 <sup>*</sup>	0.09	0.01
Race: Black	0.11	0.13	0.14	0.17	0.09	0.14	0.13	0.12	0.12	0.15	0.11	0.08
Race: Other (include White)	0.83 <sub>a</sub>	0.81	0.82	0.80	0.84	0.80	0.76	0.80	0.76	0.79	0.80	0.90
Age	28.58 <sub>a</sub> (1.08)	28.71 <sub>a</sub> <sup>**</sup> (1.05)	28.77 <sub>a</sub> <sup>**</sup> (0.99)	28.50 <sub>a</sub> (1.11)	28.76 <sub>a</sub> (1.02)	28.83 <sub>a</sub> (1.15)	28.20 (0.95)	28.03 <sup>***</sup> (0.91)	27.87 <sup>*</sup> (0.76)	28.02 <sup>**</sup> (0.92)	28.10 (0.93)	27.84 <sup>*</sup> (0.80)
Education College+	0.19 <sub>a</sub>	0.53 <sub>a</sub> <sup>***</sup>	0.37 <sup>***</sup>	0.75 <sub>c</sub> <sup>***</sup>	0.49 <sup>***</sup>	0.75 <sup>***</sup>	0.32	0.68 <sup>***</sup>	0.55 <sup>**</sup>	0.85 <sup>***</sup>	0.58 <sup>***</sup>	0.58 <sup>**</sup>
Mather Education College+	0.08 <sub>a</sub>	0.17 <sub>a</sub> <sup>***</sup>	0.15 <sub>b</sub> <sup>***</sup>	0.16 <sub>a</sub> <sup>**</sup>	0.18 <sub>a</sub> <sup>***</sup>	0.26 <sup>***</sup>	0.21	0.38 <sup>***</sup>	0.32	0.40 <sup>***</sup>	0.40 <sup>***</sup>	0.16
Father Education College+	0.15 <sub>a</sub>	0.30 <sub>c</sub> <sup>***</sup>	0.26 <sup>***</sup>	0.41 <sup>***</sup>	0.29 <sup>***</sup>	0.23	0.24	0.37 <sup>***</sup>	0.40 <sup>*</sup>	0.39 <sup>***</sup>	0.38 <sup>***</sup>	0.22
Test Score Percentile	50.83 (27.28)	60.14 <sup>***</sup> (27.10)	57.63 <sup>***</sup> (27.65)	65.24 <sup>***</sup> (25.57)	59.38 <sup>***</sup> (27.43)	60.21 <sup>**</sup> (27.13)	52.20 (28.45)	63.41 <sup>***</sup> (25.05)	51.47 (19.20)	63.14 <sup>***</sup> (23.42)	64.68 <sup>***</sup> (26.83)	68.26 <sup>**</sup> (24.08)
N	1423	322	132	74	77	39	926	319	24	120	154	21

Note: Standard deviations in parentheses; CESD measures taken in 1992 for the NLSY79 cohort and 2010 for the NLSY97 cohort; \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.10 for t-test of difference in means between ever teacher columns (before, during, and after) and rest of females in cohort; a p < 0.01, b p < 0.05, c p < 0.10 for t-test of difference in means across cohorts for corresponding columns (1 and 5, 2 and 6, 3 and 7, 4 and 8). T = Teacher. Test score percentile indicates the percentile score on the AFQT for the 1979 cohort and the ASVAB for the 1997 cohort.