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Teachers' mental health and perceptions of school climate across the transition from training to teaching

Leigh McLean*, Tashia Abry, Michelle Taylor, Manuela Jimenez, Kristen Granger

Arizona State University, T. Denny Sanford School of Social and Family Dynamics, P.O. Box 873701, Tempe, AZ 85287-3701, United States

HIGHLIGHTS

- Teachers reported their experiences as they transitioned from training to teaching.
- Symptoms of depression and anxiety increased across the transition.
- Poorer perceived school climate was related to more drastic increases in symptoms.
- Results suggest this is may be a particularly vulnerable career stage for teachers.
- Within-school factors may play a particular role in teachers' mental health.

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ABSTRACT

This study examined the trajectories of depressive and anxious symptoms among early-career teachers (N = 133) as they transitioned from their training programs into their first year of teaching. In addition, perceived school climate was explored as a moderator of these trajectories. Multilevel linear growth modeling revealed that depressive and anxious symptoms increased across the transition, and negative perceived school climate was related to more drastically increasing symptoms. Results suggest that this career stage may be a time when teachers are particularly vulnerable to declines in mental health, and speak to some within-school features that may be related to teachers' experiences.

Teaching is consistently described as a highly demanding career (Johnson et al., 2005; Travers, 2001), with teachers reporting correlates of negative mental health (e.g., depression, anxiety) such as chronic stress, components of burnout (see Maslach et al., 1981 for a review), and low job satisfaction (Ferguson, Frost, & Hall, 2012; Fernet, Guay, Senecal, & Austin, 2012; Kyriacou, 2001; Loeb, Darling-Hammond, & Luczak, 2005). These negative mental health correlates have been associated with increased absenteeism, poor job performance and poor health outcomes among educators (Hakanen, Bakker, & Schaufeli, 2006; Katz, Greenberg, Jennings, & Klein, 2016; Montgomery & Rupp, 2005; Steinhardt, Smith Jaggars, Faulk, & Gloria, 2011). Even preservice teachers (those still in training programs) report marked struggles with negative mental health correlates (Chaplain, 2008; Goldstein, 2005), which likely contribute to the high rates of attrition from the field observed during the early-career stage: Between 30% and 50% of teachers leave the field within their first 5 years (Borman & Dowling, 2008; Gallant & Riley, 2014; Sass, Flores, Claeys, & Perez, 2012; Skaalvik & Skaalvik, 2011, 2016; Struyven & Vanthournout, 2014), with U.S. teachers displaying particularly high attrition rates (Cooper & Alvarado, 2006; Ingersoll, 2003). This is especially worrisome considering that high teacher turnover rates negatively impact students' academic growth (Milanowski & Odden, 2007).

Until recently, studies of teachers' experiences have typically examined negative mental health correlates such as stress and burnout independently of each other. However, these factors often occur concurrently among teachers (Ferguson et al., 2012; Steinhardt et al., 2011), potentially pointing to a larger struggle with mental health. Indeed, recent studies that have utilized formal measures of mental health symptomatology have yielded findings

* Corresponding author.
E-mail addresses: Leigh.McLean@asu.edu (L. McLean), Tashia.Abry@asu.edu (T. Abry), melizabe@asu.edu (M. Taylor), Manuela.Jimenez@asu.edu (M. Jimenez), Kristen.Granger@asu.edu (K. Granger).

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establishing connections among teachers' clinical depression and multiple aspects of classroom quality and student performance (McLean & Connor, 2015; Sandilos et al., 2015), as well as linking teachers' anxiety to students' academic outcomes (Beilock, Gunderson, Ramirez, & Levine, 2010). Such studies provide an important foundation of research on teacher's mental health, but significant gaps do still exist. For example, investigations of teachers' mental health have typically only considered a single time-point, have not examined teachers in transition as a unique population, and have not attempted to identify how key external factors relate to negative mental health challenges. Importantly, the field has identified some associations among teachers' negative experiences (studied individually) and within-school factors, in particular the characteristics of the school climate that teachers are regularly exposed to, with findings suggesting that higher quality school climate is related to more positive teacher experiences (Collie, Shapka, & Perry, 2012; Grayson & Alvarez, 2008; Pas, Bradshaw, & Hershfeldt, 2012; Skaalvik & Skaalvik, 2009). As such, the primary goal of the present study is to examine the progression of mental health symptomatology among early-career teachers across multiple time points as they transition into formal teaching, and a secondary goal is to explore the role of within-school factors (or school climate) in these trajectories.

The literature surrounding preservice teachers' experiences indicates that struggles with negative mental health correlates likely begin *before* they start their careers, with the entrance into student-teaching practicums a probable starting point. For example, preservice teachers in the first year of their training programs have been found to report predominantly high levels of confidence, self-assurance, and optimism (Brookhart & Freeman, 1992); however stress, and especially perceived occupational stress, has been found to contribute to high levels of psychological distress among preservice teachers later in their program (i.e., in their practicum/student teaching year; Chaplain, 2008), potentially indicating that student-teachers may experience a sense of disillusionment upon entering this stage of training and before they enter their first teaching position (Goldstein, 2005). Thus, it appears that the realities and the demands of the profession set in during student teaching and result in dampened optimism (Veenman, 1984). Even so, and in support of our consideration of school climate, there is evidence to suggest that within-school/program supports such as guidance and mentoring from colleagues and superiors and a cohesive work environment may be related to more positive mental health among beginning teachers. For example, preservice teachers in their student teaching practicum who experienced high-quality guidance from their mentor teachers reported lower levels of burnout (Fives, Hamman, & Olivarez, 2007).

The present study focuses on U.S. teachers. Interestingly, teacher attrition rates show great variability across countries, with the U.S. and United Kingdom displaying markedly high teacher attrition (Cooper & Alvarado, 2006; Ingersoll, 2003) whereas other countries such as Germany, France, Hong Kong, and Sweden show greater success in retaining teachers (Cooper & Alvarado, 2006; Karsenti & Collin, 2013; McKenzie, Santiago, Sliwka, & Hiroyuki, 2005). These trends suggest that there might be structural aspects of the U.S. education system that leave its practitioners comparably more vulnerable to early struggles, perhaps due to systemic differences between countries in national educational and ideological policies and practices. For example, average teacher salaries in Germany are higher compared with the U.S. and have risen in the past 15 years while teacher salaries in the U.S. are lower and have remained stagnant (McKenzie et al., 2005). Additionally, countries differ drastically in their approaches to hiring and retaining teachers: Some place stringent demands on beginning teachers in terms of qualifications for career entry (e.g., in France and Japan entry is based on widely accepted standards of academic credentials and/or performance on entry examinations), while others have more relaxed requirements for incoming teachers (e.g., in the U.K. U.S. and Canada entry qualifications are largely determined by the hiring school/entity and are thus much less consistent; McKenzie et al., 2005). It stands to reason that differences among countries in policies, practices, and ideologies correlate with differences in teachers' experiences in their daily work environments (e.g., school climate). As such, the present study offers insight into the unique experiences of U.S. teachers that could be useful in informing future investigations that compare teacher experiences across countries.

1. Teachers' mental health

The primary goal of the present study is to examine the progressions of depressive and anxious symptoms among early-career teachers as they transition into their first teaching positions. Symptoms associated with depression include a loss of interest or pleasure in daily activities as well as prolonged feelings of fatigue, worthlessness, irritability, and diminished capacities for concentration and engagement (American Psychiatric Association, 2013). Alternately, whereas depression is generally considered to be a dampening of positive affect, anxiety is described as an overactivation of negative thought processes, particularly involving excessive worry and/or fear (American Psychiatric Association, 2013). Teachers report higher rates of mental health challenges compared to the general population. For example, Punch and Tuettemann, 1990 found that levels of psychological distress among teachers were twice that of the general population, and Johnson et al. (2005) found that, compared to 25 other common professions, teaching ranked among the top six most stressful professions. More recently, Whitaker, Becker, Herman and Gooze, (2013) found that reports of poor mental health were more prevalent within a sample of 2122 U.S. Head Start preschool teachers than in two comparable national samples of the general population. Considered together, these findings highlight the importance of mental health research within the teaching profession.

A question remains regarding the reasons for teachers' reported mental health struggles. Teachers must simultaneously balance instructional support, classroom management, planning and organization, and the facilitation of high-quality classroom relationships (Feldon, 2007; La Paro, Pianta, & Stuhlman, 2004). Additionally, teachers have many taxing obligations outside of the classroom such as working with parents and school officials, preparing class materials, and keeping up with often-changing curricular and professional development demands. Finally, teachers are increasingly subject to rigorous systems of evaluation that carry consequences for their compensation and job security. This unique constellation of demands and pressures coupled with perceptions expressed by U.S. teachers that they are generally not sufficiently paid, rewarded for, or supported in their work (McKenzie et al., 2005) likely contributes to the higher rates of reported mental health struggles. As such, researchers have recommended that investigating environmental aspects of teaching (framed in this study as school climate) as they relate to teachers' well-being is important as working environments play a role in practitioners' long-term health and success in the field (Punch and Tuettemann, 1990).

Understanding teachers' mental health is important not only for the objective of supporting teachers, but also because these symptoms have implications for students. The repercussions of teachers' mental health struggles for students range from lower-quality teacher-student relationships and instructional interactions (Hamre & Pianta, 2004; Li Grining et al., 2010) to lower overall classroom quality (McLean & Connor, 2015; Sandilos et al.,

2015), and have recently been linked to poorer academic achievement in students (McLean & Connor, 2015). Fewer studies have examined the influence of teachers' anxiety within the classroom, however at least one suggests teachers' anxiety negatively predicts students' academic success, especially in the area of mathematics (Beilock et al., 2010).

Although it is clear that mental health struggles hold negative implications for both teachers and their students, the progressions of these struggles and their relations to within-school factors (i.e., school climate) remain unclear. Encouragingly, past studies have shown that school-based implementation of mental health training and support for teachers can lead to positive outcomes for both teachers and their students through improvements in classroom climate, teacher sensitivity to student needs and behavior management, as well as diminished teacher burnout, anxiety, and depression (Raver et al., 2008; Roeser, 2013; Roeser, Skinner, Beers, & Jennings, 2012). However, such intervention and support efforts have not been directed specifically at early-career teachers, who may need them the most. Thus, a clearer understanding of how mental health struggles develop and progress among early-career teachers, and the extent to which these progressions are associated with school climate, could inform the level of need as well as how best to support teachers' mental health during their transitions from training programs into the classroom.

2. School climate

A secondary goal of this investigation is to explore external factors, specifically aspects of school climate that teachers experience once they transition into their careers, that may be associated with their anticipated progressing mental health challenges. School climate is broadly defined as "the quality and character of school life" (Cohen, McCabe, Michelli, & Pickeral, 2009, p. 182), and includes a school's levels of physical and social-emotional safety (e.g., clearly communicated and enforced rules, appropriate responses to violence or bullying), the quality of teaching and learning (e.g., instructional quality, focus on professional development for faculty, presence of clear and effective systems of leadership), relationships and collaboration (e.g., interconnectedness) among and between students and teachers, and aspects of the structural environment (e.g., cleanliness, availability of materials, curricular offerings; Cohen, 2006; Cohen et al., 2009). These dimensions of school climate are related to the experiences of all individuals within a school, including teachers (Cohen et al., 2009; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013), whose perceptions of school climate consistently relate to negative mental health correlates including work-related stress (Skaalvik & Skaalvik, 2009), job satisfaction (Taylor & Tashakkori, 1995), and burnout (Collie et al., 2012; Grayson & Alvarez, 2008; Pas et al., 2012). Moreover, studies examining the sources of *beginning* teachers' negative experiences have found that teachers report school environment factors (i.e., workload, school ethos, and level of support from colleagues and/or supervisors) as frequent contributors to chronic stress (Durham, 1992; Johnstone, 1993; Timperley and Robinson, 2000; Wilson, 2002). These findings indicate that teachers' perceptions of school climate may be an important area of focus when attempting to elucidate institutional factors associated with their mental health. Indeed, a preliminary investigation among a sample of 274 elementary to high-school age teachers found that high workload, student misbehavior, and poor employment conditions contributed to more depressive and anxious symptoms in teachers (Ferguson et al., 2012).

Our assessment of school climate focuses primarily on the perceived quality of relationships among school colleagues within and across school hierarchies, as well as the perceived sense of collaboration and innovation within a school. Importantly, prior work shows that these particular aspects of school climate, rather than more physical or geographical characteristics of a school, play a large role in teachers' professional experiences. Specifically, teachers' perceptions of the quality of relationships among teachers and with principals, collective commitments of faculty members to student learning, and systems of leadership, innovation, collaboration and cooperation have been found to account for a large majority (76%) of the variance in teacher mobility (including both attrition from the career and teachers leaving one school for another) across a school year among a large sample of teachers (Allensworth, Ponisciak, & Mazzeo, 2009). Findings from other studies have mirrored and expanded upon this, for example Burkhauser (2016) reported that teacher ratings of school climate depended most strongly on their perceptions of their principal, rather than on other school and district contextual factors. As these and related studies suggest, within-school features, especially those concerning the relations among colleagues and with superiors (principals), tend to be the most salient when teachers are assessing their school's climate and hold the most sway when predicting teachers' mobility. Therefore, we expect these particular elements of school climate (relations among colleagues, school hierarchies, levels of collaboration and innovation) to play a role in the progressing mental health of teachers as well.

In addition, to strengthen inferences that any differences in mental health trajectories detected in the present study are in fact related to within-school factors rather than factors outside of the school environment, we assert that it is important to account for key outside factors that have been well-established in the field as related to mental health. Individuals' perceptions of the social support available to them as well as the stressful life events they are experiencing have been found to be related to mental health (Bell et al., 2017; Michl, McLaughlin, Shepherd, & Nolen-Hoeksema, 2013; Park et al., 2016; Shapero et al., 2014), with less perceived social support and greater life stress consistently linked to poorer mental health. As such, this study considers teachers' perceived levels of social support from family and friends and any stressful life events they may be experiencing as statistical controls in order to gain a more accurate estimate of the extent to which school climate may be related to progressing depressive and anxious symptoms.

3. Study aims and hypotheses

The primary aim of the present study is to examine the progressions of early career teachers' symptoms of depression and anxiety as they transition from their last year of training into their first year of formal teaching. A secondary aim is to investigate whether teachers' perceptions of school climate are associated with the rates of change in these symptoms across this transition. In support of these aims we pose two research questions: First, how do early-career teachers' levels of self-reported symptoms of depression and anxiety change as they transition from preservice teacher-training programs into their teaching careers? Informed by studies that have independently documented confidence and optimism in the early years of teacher training (Brookhart & Freeman, 1992) contrasted with declines in mental health correlates toward the end of training (Chaplain, 2008) and persistent struggles while navigating the first years of formal teaching (Gallant & Riley, 2014; Sass et al., 2012; Skaalvik & Skaalvik, 2011; 2016), we predict that symptoms of depression and anxiety will increase across this transition. Second, what, if any, is the association between school climate and the trajectories of these symptoms? As past work has suggested that the within-school features examined in the present study are highly predictive of teachers' job satisfaction and eventual decisions to leave their school and/or the

field (Allensworth et al., 2009), we expect a moderation effect of perceived school climate such that teachers who transition into a school perceived as having lower-quality climate will report greater increases in depressive and anxious symptoms, and teachers who transition into a school characterized by higher-quality perceived climate will report less severe, or no increases in symptoms.

4. Methods

4.1. Procedures

4.1.1. Recruitment and data collection

Preservice teachers in the Teachers College of a large public university in the Southwestern United States were recruited to participate in a longitudinal study that followed them from the last year of their university training programs into their first year of formal teaching. Email was used to recruit students whose majors included early childhood education, elementary education and special education. Two sequential cohorts were recruited: The first cohort began participating as undergraduate seniors during the 2011-12 academic year and the second cohort began participating in the study as undergraduate seniors during the 2012-13 academic year. Although one year apart in their training programs, both cohorts followed a twice-yearly (fall and spring) data collection schedule throughout the longitudinal study.

In the present study, three time points captured each group's transition across the end of their last term of undergraduate training (spring; Time 1 [T1]), to the beginning of their first year of formal teaching (fall; Time 2 [T2]), and the end of their first year of formal teaching (spring; Time 3 [T3]). These time points matched across cohorts in terms of which stage participants were at in the transition from training to teaching (i.e., spring senior year, fall first year of teaching, spring first year of teaching), but were exactly one year apart chronologically. Per university requirements, all participants spent their final year of training in a teaching residency program in which they served as a full-time teaching assistant mentored by a lead teacher in a K-8 classroom. At each time point, study participants were emailed an individual online survey link. Participants had two weeks to complete the survey, during which time email reminders were sent to encourage participation. Participants who submitted survey responses were provided with monetary remuneration at each time point of data collection ($25 in senior year and $35 in teaching year) to compensate them for their time.

4.2. Participants

In the first cohort, 364 students were invited to participate and of these, 133 enrolled in the study. In the second cohort, 337 students were invited and 132 enrolled, resulting in a total overall sample of 265 participants. As the goal of this study was to investigate the mental health trajectories of early career teachers, only those participants from the original sample who reported a transition into a teaching position were included in the analytic sample. Of the original 265 participants, roughly 50% ($N = 133$ participants) reported being in a full-time teaching position in the year following the completion of their preservice training and these participants made up the sample for the present study. All of these participants reported that their teaching positions were in U.S. elementary or middle schools (K-8th grade). Ninety-five percent of the analytic sample were female contrasted with 88% in the full sample. Seventy-three percent in the analytic sample reported their race/ethnicity as Caucasian compared to 70% in the full sample, 19% as Hispanic/Latino in both the full and analytic samples, 3% as Asian or Pacific Islander in both samples, less than 1% as African American in the analytic sample compared to 3% in the full sample, less than 1% as Middle Eastern in both samples, and 3% as "Multiracial/Other" in both samples. Ages of participants in both samples ranged from 21 to 50 years with a mean of about 24 years, although the majority (about 95%) were under 33 years. T-tests comparing the analytic sample to the full sample (which included participants who did not become teachers or who were non-responsive at both T2 and T3) showed no significant differences between groups in T1 depressive (t (190) = -0.13, p = 0.9) or anxious (t (177) = 0.61, p = 0.54) symptoms.

Of the final analytic sample, 116 participants responded to survey requests at T1, 107 responded at T2, and 90 responded at T3. Ninety participants were responsive across the length of the study, and the remaining 43 were non-responsive after either T1 (didn't respond to T2 or T3; 3 participants) or after T2 (didn't respond to T3; 40 participants). T-tests comparing the 90 completely responsive participants to the 43 partially non-responsive participants revealed no significant differences between groups in T1 depressive (t (114) = 0.70, p = 0.48) or anxious (t (107) = 0.49, p = 0.63) symptoms or in T2 depressive (t (105) = 1.53, p = 0.13) or anxious (t (105) = 0.99, p = 0.33) symptoms.

4.3. Measures

4.3.1. Depressive symptoms

Participants' depressive symptoms were assessed at each time point with the 10-item version of the Center for Epidemiologic Studies Depression Scale (CESD-10; Radloff, 1977). This measure asked respondents to rate how often over the past week they experienced each of ten symptoms associated with depression. Example items included, "I was bothered by things that usually don't bother me" and "I could not get going." Each statement was rated using a 4-point scale ranging from *rarely or none of the time (less than 1 day)* to *most of all of the time (5–7 days)*. This scale is frequently used for studies of depressive symptomatology in the general population and has garnered robust evidence of reliability and validity (Roberts, 1980; Orme, Reis, & Herz; 1986), and has been successfully used among teacher samples multiple times in recent years (McLean & Connor, 2015; Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016; Sandilos et al., 2015). Possible scores on this measure ranged from a minimum of 10 to a maximum of 40 points, and the range of scores observed within this sample was 10–35 points. Participants' total scores were averaged across items and these mean scores were used in analyses, with higher mean scores indicating greater depressive symptoms. Within this sample, Cronbach's alpha estimates showed adequate reliability across all time points at 0.81 for T1, 0.75 for T2, and 0.78 for T3.

4.3.2. Anxious symptoms

Teachers' anxiety was assessed at each time point with the Generalized Anxiety Disorder Scale (GAD), a 7-item scale that asks users to report how often in the past two weeks they have been bothered by seven symptoms of anxiety. Examples included, "not being able to stop or control worrying" and "worrying too much about different things." Teachers responded on a 4-point scale (1 = *not at all*, 4 = *nearly every day*. Possible scores on this measure ranged from a minimum of 7 to a maximum of 28 points, and the range of scores observed within this sample reflected the full possible scale range. Participants' total scores were averaged across items and these mean scores were used in analyses, with higher mean scores indicating greater anxious symptoms. The GAD scale has strong validity and reliability evidence as a tool for measuring anxiety in the general population (Spitzer, Kroenke, Williams, & Löwe, 2006), and showed strong internal consistency in the present study's analytic sample across all time points with Cronbach's

alpha estimates of 0.94 for T1, 0.95 for T2 and 0.93 for T3.

4.3.3. School climate

Teachers' perception of school climate (SCL) was measured in the spring (T3) of participants' first year of teaching using an adapted 30-item version of the Consortium on Chicago School Research Teacher Survey (CCSR; see Sartain, Stoelinga, & Brown, 2011). This survey was adapted for the present study to include only questions pertaining to the factors previously discussed that have been found to be most predictive of teachers' decisions to leave their schools, including the perceived quality of relationships among school colleagues within and across school hierarchies, and the perceived sense of collaboration and innovation within a school. These factors are represented in the CSSR survey by two dimensions: School Leadership and Professional Capacity. School leadership questions inquired about teacher-principal trust (e.g., "To what extent do you feel respected by your principal?") Professional capacity questions asked about teachers' collaborations with their peer colleagues; the sense of collective responsibility within the school; and trust, collaboration, and innovation between teachers (e.g., "How many teachers in this school set high standards for themselves," "How many teachers in this school are eager to try new ideas," and "To what extent do you feel respected by other teachers?"). Teachers rated all items on a scale of 1 *(none/not at all*) to 5 (*nearly all/a great extent*) that indicated how many of their school partners (principals and peer colleagues) they felt fit with each statement or the extent to which they felt a given statement was true within their school. Possible scores on this measure ranged from a minimum of 30 to a maximum of 150 points, and the range of scores observed within this sample was 46–146 points. Participants' total scores were averaged across items with higher scores indicating higher-quality perceived school climate. School climate was measured at T3 to capture teachers' impressions of their school's climate after having experienced their environment for a longer period of time, rather than first impressions in the fall (T2). Reliability of this scale among teachers was first established in the CSSR study, and the adapted scale showed high reliability within the analytic sample, with a Cronbach's alpha = 0.96.

4.3.4. Covariates

Participants' perceived social support and recent stressful life events, both self-reported, were included in all predictive models as covariates to parse out variability in teachers' depressive and anxious symptoms that might be due to factors outside of the school environment. Participants' belonging to either of the two cohorts was also included to account for differences in training experiences between the two.

4.3.4.1. Perceived social support. Participants' perceived social support was measured at T3 with the Multidimensional Scale of Perceived Social Support (MSPSS; Edwards, 2004). Participants were instructed to think about the extent to which they disagreed or agreed with 20 statements pertaining the social support they receive from family, friends, colleagues, and community-based groups. Example items included "My colleagues really try to help me" and "I can talk about my problems with my family." Participants responded on a scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Possible scores on this measure ranged from a minimum of 20 to a maximum of 140 points, and the range of scores observed within this sample was 64–140 points. Participants' total scores were averaged across items and these mean scores were used in analyses, with higher mean scores indicating greater perceived social support. Perceived social support at T3 was used as a covariate in the present study. This scale showed high reliability within the analytic sample, with Cronbach's alpha = 0.90.

4.3.4.2. Stressful life events. Participants reported at T3 whether they had recently experienced stressful life events with an adapted version of the Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978). This survey listed ten target stressful life experiences including school-related events (e.g., started or finished a new program, failed or did not graduate), work-related events (e.g., fired or demoted, started or changed jobs, conditions at work change), and personal events (e.g., death of a friend or relative, major fight). Possible scores on this measure ranged from a minimum of 0 to a maximum of 10 points, and the range of scores observed within this sample was 0–8 points. Participants' total scores were averaged across items and these mean scores were used in analyses, with higher mean scores indicating a higher occurrence of stressful life events. This measure showed adequate reliability within this sample, with Chronbach's alpha = 0.81.

4.4. Analytic approach

A series of multilevel linear growth models were estimated using M*Plus* (Version 7; Muthén and Muthén, 2005). A multileveled approach was deemed most appropriate given the nested nature of the data, with multiple observations nested within participants. Further, *linear* growth was modeled as this was the most reliable approach with three time points of data, as opposed to quadratic or spline patterns of growth that require at least four time points to reliably estimate (Enders & Grimm, personal communication, June 1st, 2016). To examine the progressions of participants' mental health across the transition (research question 1), growth models were run that assessed the T3 intercept as well as change across time points in participants' depressive and anxious symptoms, respectively, while controlling for participants' perceived social support, stressful life events, and cohort. These models provided estimates of the intercepts, or average value for depressive symptoms and anxious symptoms across the entire sample at T3, as well as the slopes, or change across time points for each outcome. The intercept was estimated at T3 because previous research has cited mental health-related struggles (e.g., stress, job burnout, emotional exhaustion) as reasons that early career teachers attrite from the profession, thus setting the intercept at the last time point (the end of the first year of formal teaching) provided meaningful insight into the status of mental health symptoms after having transitioned into the classroom and after developing perceptions of school climate.

To test whether teachers' perceptions of school climate (SCL) moderated change in participants' depressive and anxious symptoms over time (research question 2), SCL was added to the initial models as a main effect and as a cross-level interaction term with the time point variable (i.e., time-by-SCL). These growth models, inclusive of these two additions (main effect and interaction term), allowed us to determine if varying levels of perceived SCL at T3 were related to differences in rates of change across time of participants' depressive and anxious symptoms. In these models, a significant main effect of SCL is interpreted as a difference in T3 depressive or anxious symptoms dependent on perceived SCL, whereas a significant time-by-SCL interaction effect indicates differences in the rates of change across time points in depression and anxiety dependent on perceived SCL.

All models controlled for participants' self-reported perceived social support and stressful life events at T3 in order to strengthen the inference that the trajectories of mental health symptoms as well as the effects of perceived SCL on mental health progression were not merely a function of personal supports or stressors. Additionally, all models controlled for cohort membership in order to account for any effects attributable to potential differences between cohorts. To account for missing data across time points due

to participant unresponsiveness we employed full information maximum likelihood, which retains statistical power associated with the full analytic sample while minimizing bias in parameter estimates when data cannot be presumed to be missing completely at random (Enders, 2001). Scores on all measures were grand-mean centered in analyses except for cohort belonging, which was dummy coded. Importantly, these analyses followed a multilevel regression framework (as opposed to a Structural Equation Modeling [SEM] framework), in which time was nested within participant. As such, traditional model fit indices normally provided in M*Plus* for SEM models (e.g., CFI, SRMR, RMSEA) are not available and therefore not reported (Curran, Obeidat, & Losardo, 2010). Significance of the main and interaction effects in conjunction with estimates of variance explained are the primary considerations.

5. Results

5.1. Preliminary analyses

5.1.1. Descriptive statistics

Descriptive statistics for all variables are presented in Table 1. On average, teachers reported relatively low levels of depression and anxiety, with scores falling below the detection cutoff score (≥4) for diagnosing clinical depression (Irwin, Artin, & Oxman, 1999) and within the minimal severity category for anxiety (Spitzer et al., 2006). On average, participants' reports of depression and anxiety were lowest at T1, increased by T2 and were highest at T3. Participants generally perceived a moderately positive SCL at T3. Additionally, participants expressed moderate levels of perceived social support and a small number of stressful life events at T3. T-tests revealed no significant differences between cohorts in depressive (t (114) = -0.62, p = 0.54) or anxious (t (107) = 0.92, p = 0.36) symptoms at T1. However, significant differences between cohorts for depression and anxiety scores were detected after the first time point: T2 and T3 depression scores were significantly higher in cohort 2 (t (105) = −3.72, $p < 0.001$, t (85) = −4.51, $p < 0.001$, respectively) and T3 anxiety scores were significantly higher in cohort 2 (t (88) = −2.07, $p < 0.01$), justifying our inclusion of cohort membership as a statistical control in the models.

5.1.2. Correlational analyses

Bivariate correlations for all study variables across time points are presented in Table 2. Significant and positive correlations indicated moderate to strong stability in both depressive and anxious symptoms from T1 to T2 and from T2 to T3. SCL at T3 was significantly and negatively related to both depression and anxiety. Additionally, at T3, social support was significantly and negatively correlated with both depression and anxiety; however, stressful life events at T3 were not significantly correlated with depression or anxiety.

Table 1
Descriptive statistics for all variables (N = 133).

Variable	n	Mean	SD	Min	Max
Depression					
Time 1	116	1.76	0.57	1	3.5
Time 2	107	1.87	0.53	1	3.5
Time 3	87	2.04	0.6	1	3.5
Anxiety					
Time 1	109	1.96	0.85	1	4
Time 2	107	2.03	0.85	1	4
Time 3	90	2.21	0.84	1	4
School Climate					
Time 3	86	0.61	1.53	0	4.37
Perceived Social Support					
Time 3	81	5.44	1.05	2	7
Stressful Life Events					
Time 3	76	2.18	1.61	0	8

Note. Descriptive statistics reported are based on participants mean scores on all measures except Stressful Life Events, which is based on total scores.

5.2. Multilevel growth models

5.2.1. Trajectories of depressive and anxious symptoms

We first examined the T3 level and nature of change in participants' depressive and anxious symptoms as they transitioned from training to teaching. Separate growth models were run for depressive and anxious symptoms (Table 3). Accounting for model covariates, the initial growth model for depressive symptoms revealed a significant intercept of 2.21 ($p < 0.001$) at the last time point of the study indicating that overall, participants reported a mean level of approximately 2.21 on the CES-D short form toward the end of their first year of formal teaching. Further, there was a significant positive slope across time points (b = 0.12, $p < 0.001$), revealing that on average, participants increased in reported mean CES-D scores by about 0.12 scale points per time point from T1 to T3. Results were similar for anxious symptoms: the mean level, or intercept, of reported anxiety symptoms at T3 was significant (b = 2.93, $p < 0.001$), as was the average slope for all participants across time points (b = 0.11, $p = 0.013$), indicating that participants' mean levels of anxious symptoms increased by about 0.11 scale points per time point from T1 to T3.

5.2.2. Moderation by SCL

We next investigated the moderation of perceived SCL on the growth trajectories of teachers' mental health symptoms (Table 3). The interaction model for depressive symptoms revealed a significant time-by-SCL interaction (b = -0.12, $p = 0.04$), indicating that participants who perceived lower-quality SCL at the end of their first year of teaching reported steeper increases in depressive symptoms across time points (Fig. 1). Simple slopes of this interaction were significant at low (−1 SD; b = 0.17, $p < 0.001$) and average (b = 0.10, $p = 0.01$) levels of SCL, but not at high (+1 SD) levels of school climate. The effect size, reported as the proportion of reduction in unexplained variance when comparing the interaction growth model to the initial growth model for depressive symptoms, was 0.19 (or 19%).

Similar effects were detected for anxious symptoms. A significant time-by-SCL interaction effect on the slope of anxious symptoms was revealed that mirrored the interaction detected for depressive symptoms: Teachers who perceived lower-quality SCL reported steeper increases in anxious symptoms (b = -0.17, $p = 0.024$; Fig. 2). Again, simple slopes of this interaction were significant at low (b = 0.23, $p < 0.001$) and average (b = 0.13, $p = 0.014$) levels of SCL, but not at high levels of SCL. The proportion of reduction in unexplained variance was 0.24 (or 24%).

6. Discussion

The primary purpose of this study was to investigate whether and how symptoms of depression and anxiety changed across the transition from preservice training to formal teaching, and a secondary purpose was to examine associations between these trajectories and teachers' perceptions of their school climate. In doing so, we sought to shed light on beginning teachers' experiences during this period in their careers as well as on within-school factors that may be related to their mental health as they transition into the classroom. We anticipated that symptoms of depression and anxiety would increase across the transition from training to teaching (research question 1), and that more negative perceptions of school climate would be related to more drastic increases in

Table 2
Bivariate correlations among study variables and across time points.

	1	2	3	4	5	6	7	8	9
1. Depression T1	–								
2. Depression T2	0.51**	–							
3. Depression T3	0.36**	0.64**	–						
4. Anxiety T1	0.66**	0.37**	0.34**	–					
5. Anxiety T2	0.55**	0.63**	0.62**	0.50**	–				
6. Anxiety T3	0.35**	0.56**	0.80**	0.47**	0.75**	–			
7. Soc. Support T3	−0.06	−0.19	−0.39**	−0.04	−0.17	−0.37**	–		
8. Life Events T3	−0.11	−0.09	0.10	0.04	0.02	0.07	0.07	–	
9. School Climate T3	−0.16	−0.37**	−0.42**	−0.12	−0.44**	−0.44**	0.31**	−0.08	–

** = correlation is significant at $p < 0.001$.
Note. T1 = Time 1, T2 = Time 2, T3 = Time 3.

Table 3
Growth model estimates.

	Initial Model			Interaction Model		
	Estimate	S.E.	*p*-value	Estimate	S.E.	*p*-value
Depression						
Intercept (T3)	2.21	0.28	<0.001	2.03	0.28	<0.001
Slope	0.12	0.03	<0.001	0.12	0.03	<0.001
Support	−0.12	0.05	0.01	−0.08	0.05	0.08
Life stress	−0.01	0.30	0.99	−0.09	0.30	0.76
Cohort	0.30	0.08	<0.001	0.29	0.08	<0.001
School climate	–	–	–	−0.36	0.09	<0.001
Time X school climate	–	–	–	−0.12	0.06	0.04
Resid. Variance within	0.12	0.02	<0.001	0.12	0.02	<0.001
Resid. Variance between	0.16	0.04	<0.001	0.13	0.04	<0.001
Anxiety						
Intercept (T3)	2.93	0.47	<0.001	2.6	0.47	<0.001
Slope	0.11	0.04	0.01	0.11	0.04	0.01
Support	−0.17	0.08	0.02	−0.11	0.08	0.16
Life stress	0.32	0.51	0.53	0.19	0.51	0.71
Cohort	0.08	0.13	0.53	0.08	0.13	0.52
School climate	–	–	–	−0.59	0.14	<0.001
Time X school climate	–	–	–	−0.17	0.08	0.02
Resid. Variance within	0.25	0.04	<0.001	0.25	0.04	<0.001
Resid. Variance between	0.43	0.12	<0.001	0.33	0.09	<0.001

Note. T3 = time 3 (spring of first year of teaching).

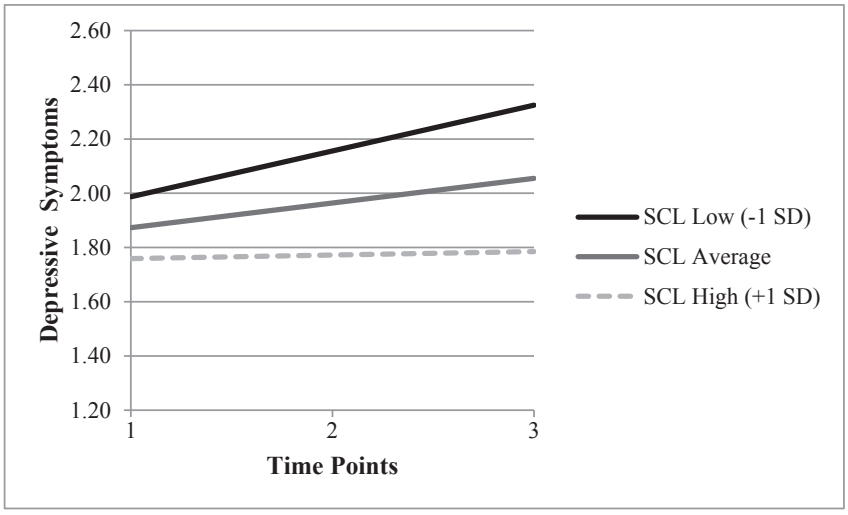

Fig. 1. Teachers who transitioned into schools with less positive school climates (SCL) experienced the most drastic increase in depressive symptoms across time points. Slopes significant at low and average levels of school climate, but not at high levels of school climate.

symptoms (Research Question 2). Results supported our hypotheses: Teachers' symptoms of both depression and anxiety were found to increase across time points, and school climate moderated their progressions in both cases. Specifically, teachers who transitioned into schools they perceived to have lower-quality climates increased the most in their depressive and anxious symptoms,

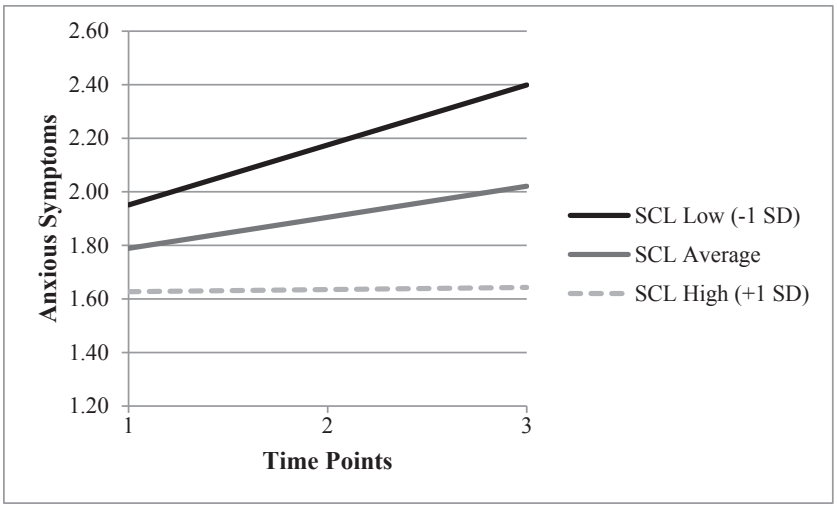

Fig. 2. Teachers who transitioned into schools with less positive school climates (SCL) experienced the most drastic increase in anxious symptoms across time points. Slopes significant at low and average levels of school climate, but not at high levels of school climate.

while teachers in schools perceived as having a positive school climate reported no significant increase in symptoms. These findings provide new information regarding when early-career teachers may need support the most, as well as information that is relevant to school support systems for teachers, professional development programs and intervention efforts aimed at improving both teacher and student outcomes. In addition, these findings inform some larger considerations and future research on these topics.

6.1. The progressions of early-career teachers' mental health symptoms

Findings for the first research question suggest that the transition from training into the classroom likely represents a sensitive period for early-career practitioners marked by increased vulnerability to worsening mental health. Notably, although teachers in this sample reported experiencing symptoms, and these symptoms generally increased, levels of depression and anxiety were not clinically severe. However, we do not know the threshold at which teachers' depressive or anxious symptoms begin to negatively affect their job satisfaction and performance. Thus, the non-clinical levels of symptomatology reported in this sample should not be dismissed. Further, the present study only spanned through the end of participants' first year of teaching. Given the high attrition rates observed among early-career teachers within the first five years of teaching and other indicators of early career burnout (Chang, 2009; Ingersoll & Smith, 2003), we anticipate overall negative mental health symptoms to continue to increase beyond the first year of teaching. In other words, although these struggles may not reach clinical levels during the first year of teaching, they may continue to increase over time in the absence of intervening factors.

The first consideration we offer regarding this finding is that mental health struggles may begin *before* teachers enter their careers (Chaplain, 2008). Although mental health support in school and classroom settings is no doubt important to practicing teachers, our findings that teachers' mental health symptoms worsened as early as their first year of teaching suggests that preservice teachers could benefit from mental health training and support before they start their careers. Current models of teacher training typically do not include any focus on mental health, despite evidence that skills such as emotional regulation are crucial to teachers' success (Day, 2008; Newberry, 2013). Promisingly, Roeser et al. (2012; Roeser, 2013) investigated the feasibility and efficacy of a mindfulness training program for teachers in promoting occupational health with promising results: Elementary teachers who underwent mindfulness training reported decreased feelings of occupational stress and burnout, two established correlates of overall psychological well-being. We anticipate that the benefits of programs that support positive mental health (also see the Building Resilience in Teacher Education framework from Mansfield and colleagues, 2016) could be further amplified if they were incorporated into preservice training programs.

Another important consideration is that teachers' increased vulnerability to worsening mental health as they begin their careers may be a contributing factor to the high rates of attrition observed among early-career teachers, and this is especially salient when considering that these high rates of attrition negatively impact students: In their large-scale examination of turnover, Ronfeldt, Loeb, and Wyckoff (2013) found that students who experienced more teacher turnover achieved at lower levels in both literacy and math, and these effects were strongest among students already at risk for academic failure. Moreover, better-trained and more experienced teachers tend to be assigned to lower-risk students of greater academic ability and fewer discipline problems (Clotfelter, Ladd, & Vigdor, 2006; Feng, 2009), making the cyclical and problematic nature of this relation clear. What is also clear, given the well-established relation between mental health correlates and teacher attrition, is that supporting teachers' mental health could be an important part of breaking this cycle (Borman & Dowling, 2008; Darr & Johns, 2008; Skaalvik & Skaalvik, 2011), especially if this support comes early on when teachers are perhaps particularly vulnerable to negative experiences.

6.2. Associations with perceived school climate

Findings related to our second research question highlight relations between school climate and the progressions of early-career teachers' mental health symptoms. However, it is crucial to acknowledge the lack of temporal precedence of the school climate variable and the self-reported nature of all study variables by teachers. As such, the nature and directionality of these associations remain unclear. Negative school climate may have exacerbated negative mental health symptoms, however it could also be

that teachers who experienced more symptoms across the transition were more likely to perceive a poorer school climate, and perhaps were also less able to contribute to positive school climate. Further still, reciprocal relations could exist among these factors. While the directionality of relations cannot be established here, we assert that the findings regarding school climate offer important preliminary insight upon which future research, policy and school-level intervention efforts can build.

Regarding the potential for school climate to directly impact teachers' mental health, there is strong empirical evidence that features of the environment teachers experience every day do indeed contribute significantly to their well-being and success (Durham, 1992; Johnstone, 1993; Timperley and Robinson, 2000; Wilson, 2002). Our measurement of school climate focused on how members of a school relate to, communicate with, and collaborate with one another, and so it could be that a school's efforts to enhance these factors may lead to improved mental health of its teachers. This is supported by past studies indicating that a school's interpersonal features including level of support from colleagues and superiors and the stress of teacher colleagues are significant contributors to teachers' work-related psychological distress (Travers & Cooper, 1996; Wooton, 1993). Alternately, when considering that teachers' negative mental health symptoms may negatively affect their perceptions of, and ability to contribute to, positive school climate, large-scale efforts to support early career teachers' positive mental health may improve their perceptions of (and potentially contributions to) school climate. Perhaps a multi-component approach that attempts to improve both school climate and teachers' mental health could contribute to positive results in terms of teachers' well-being and longevity in the field and students' success in the classroom.

Of note, two of the covariates included in this study were found to relate to symptoms of depression and anxiety: Greater perceived social support was associated with fewer symptoms of anxiety, and belonging to the second cohort was related to more depressive symptoms. Although these relations were not probed rigorously, they suggest that factors outside the school environment, namely individuals' social and family systems and their cohort-specific preservice training experiences, likely also play a role in the progression of mental health symptoms.

6.3. Broader considerations

Although not captured by the present study, there could be larger systemic contributors to the current findings that warrant future investigation. As previously mentioned, countries differ greatly in their approach to training, hiring and supporting teachers, and these differences likely play a role in the professional success and longevity of a country's practitioners. Specifically, the literature identifies two country-level approaches to teacher employment and retention: "career-based" and "position-based" (McKenzie et al., 2005). In "career-based" systems such as in France, Japan, Korea, and Spain teachers enter into the profession early after completing widely regulated training and generally remain in the profession throughout their working life. These systems put in place a steady pathway to promotion and increasing earnings and offer better overall job security and pension benefits. In contrast, in "position-based" systems such as those observed in the U.S., U.K., Canada, and Switzerland training is less regulated and so entry into the career is characterized by competition between candidates for individual positions. It is more common in these systems for teachers to enter from other careers, as is movement from position to position. Salaries and benefits tend to remain stagnant, and career advancement again depends on successfully competing for vacancies. These two systems, while each associated with various strengths and weaknesses, result in very different teacher satisfaction and retention outcomes, with "career-based" systems showing markedly greater success retaining teachers long-term. We contend that the "position-based" approach observed in the U.S. may be a macro-level contributor to negative professional experiences and thus poorer perceived school climates, perhaps through mechanisms such as increased feelings of competition between colleagues, and this may have related to the worsening mental health observed. However, this remains to be empirically investigated.

6.4. Limitations and future directions

Some features of this study warrant mention as they may limit the generalizability of results. First, participants in this study were not particularly diverse in age, gender (very few males), or race/ethnicity and so results are limited in generalizability to those groups underrepresented here. Second, the final analytic sample of participants who reported becoming teachers did differ in some demographic characteristics from the full sample initially recruited for the longitudinal study, most notably the analytic sample included a higher percentage of women than the full sample, as well as some minor differences between samples in ethnic makeup. It could be that males and/or those of particular racial/ethnic groups experience different levels of mental health prevalence and progression than were observed in this study and so were more likely to ignore solicitations for surveys or attrit from the study/teaching altogether. As such, the full scope of participants' negative mental health experiences across gender and ethnic groups may not have been captured within this study, and this should be considered when interpreting findings. Third, participants were recruited from a single university training program. Each teacher-training program has unique features and requirements that may have implications for the mental health of the preservice teachers enrolled there. Fourth, as previously discussed, the design of the study prevents us from making any causal claims about the role of school climate as temporal precedence of school climate on the trajectories of depressive and anxious symptoms was not established (school climate was measured at T3) and data from this study were collected using self-report methods. As such, it is important to recognize that the associations presented are correlational in nature, precluding causal inference regarding the direction of relations between school climate and mental health trajectories. Last, it could be that participants struggling with more depressive and/or anxious symptoms were less likely to respond to requests for survey data, which would result in underestimation of results. Future efforts in this line of research should attempt to remedy these shortcomings; however, we are confident the results of the present study offer valuable, preliminary contributions to the field upon which future efforts could build.

The results of this study support the assertion that early-career teachers' mental health is an important factor to consider within the fields of educational research and practice, and that such consideration should come not only during their first years of teaching, but before they begin their careers. Although the current state of the education profession in the U.S. may at times paint a discouraging picture, this and related research shows there are steps that can be taken to ameliorate some of the common struggles experienced by teachers, with this study suggesting that extra support for teachers in the beginning of their careers may be particularly impactful. Although this is an important first step, there are still additional questions to be investigated. Of particular importance is an investigation of the sources of early-career teachers' mental health struggles. We identified school climate as a related factor, but much of the variation in depressive and anxious

symptoms remained unexplained. Studies expanding on these findings could further clarify which factors influence teachers' health, success, and longevity in the field to inform how best to support them in their profession. Specifically, we anticipate that teachers' personal characteristics such as temperament, coping strategies, resilience, and self-efficacy may also contribute to their mental health. It could also be that professional characteristics, such as grade level taught and educational focus (for example, special education teachers vs. general population teachers) could play a role in the variables investigated here, and warrant further exploration. Additionally, the field could benefit from more extended longitudinal investigations of mental health trajectories across multiple years of early-career teaching in order to inform how these symptoms progress and contribute to longer-term teacher and student outcomes (such as the high attrition rate observed in the first five years of teaching and student achievement). Lastly, an investigation of country-level differences in teachers' mental health and well-being would serve to inform the larger systems in place that "trickle down" to affect the experiences of individual practitioners and would undoubtedly offer valuable insight into the larger policy changes that could be put in place to support practitioners. In pursuing these important questions, the field can move toward a more comprehensive understanding of the origins of teachers' mental health struggles, as well as a broader knowledge base from which to inform how best to address these issues. Such efforts would not only improve the personal and professional outcomes of our nation's teachers, but would likely enrich the experiences of their students as well.

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