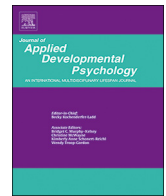




Contents lists available at ScienceDirect

## Journal of Applied Developmental Psychology

journal homepage: [www.elsevier.com/locate/jappdp](http://www.elsevier.com/locate/jappdp)

## Risk for occupational stress among U.S. kindergarten teachers

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## ARTICLE INFO

## Keywords:

Teacher stress  
Occupational commitment  
Teacher attrition

## ABSTRACT

The 2011–12 Schools and Staffing Survey (SASS) was used to examine occupational stress, occupational commitment, and intention to remain in teaching in a nationally representative sample of U.S. kindergarten teachers ( $n = 744$ ). Teachers who perceived classroom resources as sufficient to meet demands, tended to report they would become a teacher again (86.5%) and reported intentions to remain in the profession (87.6%). However, of teachers who perceived classroom resources as insufficient to meet classroom demands, only 50.2% reported they would become teachers again, and only 61.4% reported they intended to remain in the profession. Logistic regression was used to examine teacher responses to these items while controlling for school- and teacher-level covariates. Teachers perceiving sufficient resources were more likely to report they would become teachers again and intended to remain in teaching (odds ratios = 2.612, 1.863) while teachers perceiving insufficient resources were much less likely (odds ratios = 0.324, 0.327).

## Occupational stress among U.S. kindergarten teachers

Teacher attrition, a phenomenon describing teachers who voluntarily exit the field, has emerged as a major concern for both policy makers and researchers within the United States. The exceedingly high rate of pre-retirement teacher attrition in the U.S. – approximately 5.3% of the workforce – has been well documented over the past several decades, as have the associated financial, organizational, and educational costs (Borman & Maritza, 2008; Kelly & Northrop, 2015; Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Schools, school systems, and state education agencies spend large sums of scarce resources on teacher induction and initial training, on-going professional development of new teachers, and materials for recruitment and hiring. All of these costs increase as teacher turnover grows.

Teacher turnover is also disruptive to the educational process and harmful to student developmental progress and achievement of instructional goals. When teachers have a more positive experience with their jobs and are less stressed, they are much more effective at supporting the growth and development of young children. Conversely, when teachers experience greater stress, they create more stressful learning environments for their students (Pakarinen et al., 2010).

Recent studies have focused on the affective dimensions of young learners, suggesting that students learning under less stressful environs are more educationally productive. A growing body of evidence has

shown that mindfulness training for young students can have positive benefits related to enhanced attention, self-regulation, executive functioning, and social skills (Frank, Jennings, & Greenberg, 2013; Roeser, 2013). Concurrently, research on early childhood teachers, an important in-class contributor to students' academic and affective level development (Jennings & DiPrete, 2010), deserves comparable analysis. For example, when teachers learn mindfulness skills, and thereby enhanced positive coping strategies, relationships with their preschool students have shown improvement (Singh, Lancioni, Winton, Karaszia, & Singh, 2013). Understanding how teachers in the field appraise their workplace and the extent these perceptions predict other occupational concerns informs school administration which teachers categorize as most stress-vulnerable. Identifying demanded, early childhood faculty affords stakeholders the opportunity to preemptively address teachers' needs; thereby improving the workplace climate and potentially improving the instructional effectiveness and productivity.

Gaining a better understanding of the processes involved in teacher attrition is imperative for developing effective approaches to tackling these issues. Work-related stress is recognized as a key variable related to teacher attrition, and high levels of stress in U.S. teachers have been widely noted in the literature (e.g., Johnson, Berg, & Donaldson, 2005). While there is a growing base of teacher stress research, most studies focus on external and structural factors related to stress (Zellars, Hochwarter, Perrewé, Hoffman, & Ford, 2004), such as salary (Loeb,

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<https://doi.org/10.1016/j.appdev.2018.07.003>

Received 4 December 2017; Received in revised form 25 July 2018; Accepted 26 July 2018

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Darling-Hammond, & Luczak, 2005) and class size (French, 1993). Although there is certainly merit to examining these structural aspects of teacher stress, the psychological factors associated with teachers' everyday experience of their classrooms are often ignored, producing an incomplete picture of how stress functions in the teacher workforce (Jepson & Forrest, 2006).

### The transactional conceptualization of occupational stress

A transactional conceptualization of teacher stress, which focuses on teacher workplace perceptions, defines the phenomenon as a negative affective response that results when a teacher perceives environmental demands in the classroom as exceeding available resources (Kyriacou & Sutcliffe, 1977; Lazarus & Folkman, 1984). Teachers are bombarded with numerous potential stressors, including large class sizes, low salaries, and students with challenging behaviors and special needs (McCarthy, Lambert, & Ullrich, 2012). However, whether a teacher is likely to experience stress in response to the classroom environment is largely dependent upon their perceptions of the balance between classroom demands and resources (Lambert, O'Donnell, Kusherman, & McCarthy, 2006). Therefore, not all teachers become stressed, which may partially explain why not all teachers choose to leave the profession.

The Schools and Staffing Survey (SASS), a nationally representative study of the U.S. teacher workforce, lends itself to the investigation of two primary psychological antecedents of attrition, namely occupational commitment and intention to remain in the field (Elangovan, 2001). Occupational commitment, which describes an employee's affective attachment to their career, is a related but separate construct from organizational commitment, which refers to attachment to a particular workplace or employer (Hackett, Lapierre, & Hausdorf, 2001; Meyer, Allen, & Smith, 1993). Across fields, occupational commitment is recognized as an important predictor of employee performance, quality, and turnover (e.g., Gardner, 1992; Ingersoll & Alsalam, 1997).

Ingersoll and Alsalam (1997) measured occupational commitment with the same SASS item used in the present study; in it, teachers were asked whether they would re-enter teaching if given the chance to start their career over. The rationale given by Ingersoll and Alsalam (1997) for measuring commitment with this item was that a response of "certainly would become a teacher again" was indicative of feelings of enthusiasm, engagement, and satisfaction toward teaching. In addition to commitment, intention to remain in the field is another key antecedent to attrition. In fact, intention is widely considered to be one of the strongest predictors of actual attrition (e.g., Joo & Park, 2010; Lee & Mowday, 2017; Moore, 2000; Tett & Meyer, 1993).

Investigating whether risk for stress is related to occupational commitment and intention to stay in teaching could provide valuable insight into the psychological processes underlying precursors to attrition, as well as offer a more nuanced understanding of teacher stress. As noted by Jepson and Forrest (2006), the relationship between occupational commitment and work stress is rarely addressed in educational research, in spite of the rich potential for findings to inform both theory and policy. Intention to quit is also rarely examined in teacher stress literature. While notable exceptions do exist (e.g., Conley & You, 2017; Jepson & Forrest, 2006; Miller, Brownell, & Smith, 1999), teacher stress has rarely been operationalized from a transactional, appraisal-based perspective.

Within transactional theory, appraisals are critical in determining an individual's stress vulnerability (Lazarus, DeLongis, Folkman, & Gruen, 1985). Lazarus (2001) describes appraisal as a cognitive process, wherein one assesses the environment for potential threats to well-being, and evaluates the availability of coping resources. Thus, appraisals are understood to include a mixture of objective workplace realities leavened with individual interpretation. Individual differences in appraisals, then, may explain how two teachers in the same environment may have markedly different responses; one teacher may be

thriving, for example, while the other may frequently experience emotional, cognitive, and/or physical symptoms of stress. The transactional perspective, which posits appraisals of demands and resources as central to understanding stress, may be particularly appropriate for understanding elementary teacher's stress, since they work in intact classrooms and encounter similar classroom demands and resources on a daily basis (McCarthy, Lambert, O'Donnell, & Melendres, 2009).

### The classroom appraisal of resources and demands

Studies that examine the relationship between attrition and stress from a psychological, appraisal-based perspective arguably help to create a more complete picture of the processes involved in teacher attrition. In order to study stress from a transactional framework, the Classroom Appraisal of Resources and Demands (CARD) measure was developed and validated, which assesses whether teacher appraisals of resources in the classroom environment are sufficient to meet perceived demands, and allows for the classification of teachers according to their risk for occupational stress (McCarthy et al., 2009). Therefore, the CARD helps address the methodological challenges associated with approaching teacher stress from the transactional perspective by measuring elementary teachers' perceptions and appraisals of classroom demands and resources.

Classroom Demands are measured in the following categories: students with problematic behaviors, other student-related demands such as poor attendance, administrative demands, and lack of instructional resources (sample item: availability of instructional supplies). The Resources section of the CARD asks elementary teachers about the helpfulness of the following types of classroom resources: availability and helpfulness of school support personnel (e.g. specialists and classroom aides), administrative support, other adults (e.g. community volunteers), instructional support materials, and specialized instructional resources (e.g. resources to help support children with developmental delays).

CARD data can be used to classify teachers using the difference between their ratings of demands and resources in the classroom, labeled the Appraisal Index, since it refers to the overall appraisal of teachers' resources vis-à-vis their demands. The Appraisal Index is a difference score (Classroom Demands – Classroom Resources) that is used to place teachers into three groups according to their risk for stress (see McCarthy, Lambert, Lineback, Fitchett, & Baddouh, 2016 for a review of the classification procedures): (1) teachers perceiving classroom resources as greater than demands (labeled the Resourced group), (2) teachers perceiving classroom demands as equal to resources (labeled the Balanced group), and (3) teachers perceiving classroom demands as greater than resources (labeled the Demanded group). According to Lazarus and Folkman's (1984) transactional model of stress, this last group (Demanded) is theorized to be most vulnerable to occupational stress (Lambert et al., 2006).

Evidence for the reliability and validity of the CARD have been reported (McCarthy et al., 2009). The theory that Demanded group teachers are most vulnerable to stress was supported in a review of 18 studies using the CARD, which demonstrated that teachers' scores on the CARD were associated with numerous indicators of occupational health, including job satisfaction, burnout symptoms, and occupational mobility (McCarthy et al., 2016).

Specifically, the CARD classification system was used to examine perceptions of the workplace environment among a national sample of first year teachers. Teachers in the Demanded group were found to report much higher levels of burnout symptoms, much lower levels of professional autonomy, and fewer professional supports than teachers in the Balanced or Resourced groups (Fitchett, McCarthy, Lambert, & Boyle, 2017). Previous research with samples of preschool teachers demonstrated the association between relatively high classroom concentration levels of children with problem behaviors and other special needs, and teacher risk for occupational stress (Lambert et al., 2006).

Previous research using the CARD with samples of elementary school teachers in the U.S. (O'Donnell, Lambert, & McCarthy, 2008; McCarthy et al., 2009) and Germany (Ullrich, Lambert, & McCarthy, 2012; McCarthy et al., 2012) found most of the variability in burnout symptoms was between teachers within the same school as opposed to between schools. These findings do not obscure the very real differences between elementary schools with respect to resources, management climate, and communities served. Rather, they suggest that individual teacher perceptions of classroom demands and resources weigh heavily in identifying which teachers are most at risk for stress.

Being at risk for occupational stress in this context means a teacher appraises their classroom resources as insufficient vis-à-vis their classroom demands, putting them at greater risk for stress symptoms and lowered occupational health (Lambert, McCarthy, Fitchett, Lineback, & Reiser, 2015). However, accounting for differences in teacher perceptions of workplace conditions raises a third issue with important policy implications. Specifically, examination of between teacher differences in appraisal patterns can not only lead to an understanding of associations between teacher stress and perceptions of the workplace as suggested by transactional theory, but can help illustrate the extent to which teacher stress is also accounted for by other factors such as teacher, classroom, and school characteristics, and broader contextual factors, such as state policy (Lambert et al., 2015; Lambert, McCarthy, Fitchett, and Eyal (in press)).

While the CARD has been used with many local samples of elementary teachers, evidence has shown that the classification approach to assessing teacher demands and resources in the classroom can be replicated with responses to SASS items from the National Center for Education Statistics, which periodically surveys teachers regarding their appraisals of the workplace climate (Lambert et al., 2015). The CARD scoring and classification system has been successfully adapted for use with matched items from the nationally representative SASS, opening the doors for appraisal-based research on a much larger scale (Lambert et al., 2015).

While the specific classroom demands and resources items from the CARD are not included in the SASS survey, SASS items asking about classroom demands and resources are conceptually similar, and the classification strategy of creating difference scores to arrive at the Appraisal Index has been supported in previous research (Lambert et al., 2015). Further, assignment of teachers to categories according to their risk for stress was supported through predicted associations with other variables available in the SASS data set, specifically those having to do with job satisfaction, occupational commitment, and burnout symptoms. An important question is therefore how much of a teacher's risk for stress is associated with classroom appraisals, and to what extent do teachers' professional characteristics, school context, and state policy contribute to a teacher's risk for stress, as well their risk for burnout and reduced occupational health? In answering this question, it is important to note that the SASS teacher questionnaire does not directly assess perceived stress among teachers, nor does it include any physiological markers of the stress response. Therefore, we refer to what is being measured by the CARD scoring protocol as “risk for stress” because there is a substantial research and theoretical literature that links an imbalance in appraisals of resources and demands with a higher likelihood of reported stress symptoms.

The current study follows and extends recent studies (Fitchett et al., 2017; Lambert et al., in press) by applying a transactional framework to examine how risk for stress relates to teachers' occupational commitment and intention to remain in the field. These studies found that risk for stress was related to U.S. elementary and secondary teachers' occupational commitment and intention to stay. While the previous studies (Fitchett et al., 2017; Lambert et al., in press) used the 2007–08 SASS and examined risk for stress in elementary and secondary teachers across all grade levels taught, notable features of the current study are its use of the 2011–12 SASS and its focus specifically on kindergarten teachers, a population often neglected in educator stress research (Tsai,

Fung, & Chow, 2006).

### Teacher stress among kindergarten teachers

Most teacher stress and attrition research is centered on secondary and/or elementary school teachers, with kindergarten often lumped together with the other elementary grades. However, U.S. elementary schools typically span across six grade levels (kindergarten through fifth grade) and are increasingly including preschool as well. While kindergarten teachers likely experience many of the same classroom demands as teachers in other grades, there is evidence that the kindergarten teaching environment is unique; in fact, Goldstein (2007) specifically refers to the “challenging climate of kindergarten.” Kindergarten is the first time many students have been a part of formal education; as such, teachers may have to address student adjustment issues (Rimm-Kaufman, Pianta, & Cox, 2000).

Additionally, kindergarten teachers are often working with children who are in very early cognitive, social, physical and emotional developmental stages. They report feeling torn between strongly held beliefs about how to best meet the developmental needs of their students, and adhere to current standards-based educational reforms (Goldstein, 2007). This conflict has contributed to an identity confusion among kindergarten teachers as to whether they should privilege solely academic achievement, or whole child development including social and emotional development in their instruction (Dombkowski, 2001). Furthermore, kindergarten teachers are required to adapt and differentiate instruction to meet students on wide developmental spectrum (Rimm-Kaufman et al., 2000).

The desire of kindergarten teachers to focus primarily on whole child development rather than solely academic, subject-specific mastery suggests that they could perceive classroom resources and demands substantially differently from their peers. For example, pressures related to high stakes testing may not be direct stress aggravators for kindergarten teachers, as compared to third or fourth grade practitioners where instructional practices are linked to federal and state accountability mandates. However, formative assessment requirements can be very time consuming for kindergarten teachers (Fitchett et al., 2017). Moreover, kindergarten teachers might be particularly sensitive to the demands of their students—including the cultural capital that they bring from outside the classroom (Jennings & DiPrete, 2010). This points to potential unique differences in—and appraisals of—kindergarten teachers' classroom environment versus other elementary or secondary teachers. Given that a central tenet of transactional theory posits that teacher stress results from an appraisal of the workplace environment, it is worthwhile to investigate whether kindergarten teachers exhibit different relationships between risk for stress and the outcome variables than were found in similar studies of elementary and secondary teachers (Fitchett et al., 2017; Lambert et al., in press).

### Goals of the current study

The current study was an attempt to examine a subset of the population of early childhood teachers, those who teach kindergarten, regarding their risk for occupational stress, level of occupational commitment, and reported intention to remain in teaching. Risk for stress was indicated by teacher appraisals of resources and demands. The following research questions guided the analyses:

1. Is risk for occupational stress among kindergarten teachers related to their level of occupational commitment and/or intention to remain in teaching?
2. When controlling for teacher characteristics and school/classroom context, is risk for occupational stress among kindergarten teachers related to their level of occupational commitment and/or intention to remain in teaching?

## Method

### Data source and participants

The participants in this study ( $n = 744$ ) were selected from among all the full-time kindergarten teachers who responded to the 2011–12 Schools and Staffing Survey (SASS). SASS was a recurring survey of the teacher workforce of the United States and is conducted by the National Center for Education Statistics (NCES). It has since been redesigned and renamed as the National Teacher and Principal Survey (NTPS), also conducted by NCES. A complex multistage sampling procedure was used to obtain a nationally representative sample of teachers. The total SASS sample included 813 kindergarten teachers who taught within 744 schools. The majority of these teachers (84.4%,  $n = 686$ ) were the only respondent from their respective school. Therefore, it was not possible to use a multilevel modeling approach to incorporate the nesting of teachers within school environments. Furthermore, of the 127 teachers who were not the only respondent from their school, none worked in schools with more than four respondents. Therefore, to facilitate the use of a single level modeling strategy, one teacher was randomly selected from each of the 58 schools with more than one respondent as follows: (a) one teacher from each of the 49 schools with two respondents, (b) one teacher from each of the seven schools with three respondents, and (c) one teacher from each of the two schools with four respondents. This method preserved 91.5% of the total sample of kindergarten respondents and ensured no shared variance among teachers within the same school.

The sample included teachers from all 50 states and the District of Columbia. Teacher demographic and professional background information along with school characteristics are summarized in Table 1. Given the complex, multistage sampling procedures, the purposeful oversampling of subgroups, and the varying non-response rates across subgroups of teachers, weighting is required to insure that the results are nationally representative. The teacher final sampling weights were normalized and applied to the results in Table 1.

The majority of the teachers had worked in education for two or more years (89.6%) and the remaining 10.4% were new to teaching as defined by having completed less than 2 years of full time teaching experience. The average years of experience in education was 13.94 years ( $SD = 9.48$ ). A minority of teachers reported having a mentor (17.2%). Male teachers made up only 3.4% of the sample. African American teachers were represented by 10.3% of the sample and Hispanic teachers by 5.3% of the sample. With respect to the school settings where the teachers worked, 31.1% were urban, 38.3% rural, and 30.6% suburban. The average school-wide percentages of students with specific special needs were as follows: Individual Education Programs (IEP) 9.27% ( $SD = 11.46$ ), limited English proficiency (LEP) 15.14% ( $SD = 23.65$ ), and qualified for free or reduced price lunch through the National School Lunch Program (FRL) 54.59% ( $SD = 28.42$ ).

Alternatively certified teachers comprised 10.7% of the sample. These teachers did not receive their training through a traditional

undergraduate teacher training program. Rather, they were trained through the following pathways: (1) lateral entry programs designed to train teacher candidates who already have degrees in other fields and are making a career change, (2) teacher residency models whereby teachers are trained while embedded within schools, or (3) public service programs such as Teacher for America.

### Measures

*The 2011–2012 Schools and Staffing Survey (SASS).* SASS used a complex multistage sampling procedure in which schools were sampled and then samples of teachers were selected from within each sampled school. SASS was designed to collect data regarding teacher perceptions of school climate, overall employment and working conditions, and descriptive data about school contexts throughout the nation (NCES, 2007). It was designed to create a nationally representative sample of teachers and to oversample low incidence sub-groups (i.e. teachers working in private schools, public charter schools, Bureau of Indian Education-funded schools, and in small states such as Delaware).

SASS datasets do not contain missing data. NCES uses imputation methods to estimate any missing values for the researcher prior to the release of the dataset to researchers. Four different imputation strategies are used by NCES. They are based on extracting the missing data from other sources within the SASS family of data sources, imputing values based on the respondent's other responses, and imputing values based on the responses of other demographically similar participants.

The dependent variables for this study were also created from SASS data. The dependent variable referring to intention to remain in teaching was measured using a SASS item reflecting teachers' perceptions about their likelihood of remaining in the occupation: "How long do you plan to remain in teaching?" (SASS question 66b, variable number T0473). Participants selected one of the following eight discreet response options: (1) As long as I am able, (2) Until I am eligible for retirement benefits from this job, (3) Until I am eligible for retirement benefits from another job, (4) Until I am eligible for Social Security benefits, (5) Until a specific life event occurs (e.g. parenthood, marriage), (6) Until a more desirable job opportunity comes along, (7) Definitely plan to leave as soon as I can, and (8) Undecided at this time. Given that we were not investigating a teacher's reasons for leaving, and were most interested in their stated intention to return or not return, we made the decision to dichotomize the response options rather than use a multinomial logistic regression approach. Response codes 1–4 were coded as 1 for intention to return, and codes 5–8 were coded as 0 for intention not to return.

Professional commitment was represented by an item that asks respondents whether they would become a teacher again if starting their career over: "If you could go back to your college days and start over again, would you become a teacher or not?" (SASS question 66a, variable number T0472). This question included the following response options in a five point Likert scale format: (1) Certainly would become a teacher, (2) Probably would become a teacher, (3) Chances about even for and against, (4) Probably would not become a teacher, and (5) Certainly would not become a teacher. The responses were combined into a dichotomous variable such that (1) "Certainly" and (2) "Probably" would become a teacher were combined for a code of 1 and the remaining responses were coded as 0 to represent those who reported they would not become a teacher again. The decision was made to dichotomize the responses for several reasons. First, this variable was used as an outcome measure and yet was comprised of a single item, not a scale score. Second, the distribution of responses was very non-normal. Even if it was approximately normally distributed, it would still consist of five discreet ordinal level responses. Furthermore, we were most interested in whether a teacher would become a teacher again, not how strongly they felt about that belief or how they used the Likert scale. Finally, we were interested in direct comparability of the model results between the two analyses.

**Table 1**  
Teacher demographics.

School setting	
Urban	31.1%
Rural	38.3%
Suburban	30.6%
Alternatively certified	10.7%
Had a mentor	17.2%
Male	3.4%
Hispanic	10.3%
African American	5.3%
New to teaching	10.4%

Teachers' risk for stress was examined in two ways. First, an appraisal index was created to examine teachers' risk for occupational stress (as described in the procedures below). Second, a classification system was employed to classify teachers as being Resourced (least at risk for stress), Balanced, or Demanded (most at risk for occupational stress). The same CARD scoring strategy used in previous SASS research (Lambert et al., 2015; Lambert et al., in press) was applied to the teacher responses in the current sample.

The first step toward classifying teachers according to their risk for occupational stress involved creating scale scores for Classroom Demands and Classroom Resources. There were 13 SASS items included in the Demands scale and they focus on topics such as paperwork, administrative, and non-instructional duties, students with problem behaviors, student absenteeism, lack of parental involvement, and students living in poverty. These items included a four point Likert scale ranging from "Not a Problem" to "Serious Problem." An example item is SASS question "Lack of parental involvement is a problem at this school." There were 11 SASS items included in the Resources scale and they focus on topics such as clear communication from administrators, administrative support for and recognition of teachers, collegiality of school staff, and the availability of instructional resources and materials. These items included a four point Likert scale ranging from "Strongly Disagree" to Strongly Agree. An example item is SASS question 63a (variable T0435): "The school administration's behavior toward the staff is supportive and encouraging." For a complete list of the SASS items used see Lambert et al. (2015) and Lambert et al., in press.

A specific case of the one parameter item response theory (IRT) model, the Rasch rating scale model, was used through the WINSTEPS software package to combine the SASS responses for each scale into scale scores and estimate ability parameters for each teacher. In order to match the previous protocol for classifying teachers using the CARD, an Appraisal index score was created based on the difference between the Demands and Resources scale scores. The general form of the reliability of a difference score formula was used to examine the reliability of the Appraisal Index scores as it allows for different reliability coefficients and variances for each of the component scale scores and the degree of correlation between the scale scores involved to be incorporated into the reliability estimate (Crocker & Algina, 1986). Given that the Demands and Resources scale scores were moderately correlated ( $r = -0.476$ ), and both the Classroom Demands ( $\alpha = 0.884$ ) and Resources ( $\alpha = 0.843$ ) scales yielded scores with adequate internal consistency reliability, the reliability of the difference score was 0.908. This reliability of the difference score result confirms values found using the same method in previous SASS studies (0.899, Lambert et al., 2015) and CARD studies (0.947, McCarthy et al., 2016).

Also following the CARD scoring protocol, a 95% confidence interval was formed around no difference between the Demands and Resources scale scores (Lambert et al., 2015). Teachers who provided difference scores greater than the upper limit of this interval were classified in the Demands group, those who provided difference scores below the lower limit of the confidence interval were classified in the Resourced group, and those with difference scores within the interval were classified in the Balanced group.

Creation of a Balanced group allows for a complete operationalization of the appraisal construct within the transactional model, and was ultimately supported by our findings that the Resourced and Balanced groups were different from one another (see Table 2). Thus, if Resourced and Balanced had been combined into one group, the effect of resources could have potentially been masked by the appraisals of the Balanced group teachers. Furthermore, the Balanced group represents teachers without a specific pattern to their appraisals. These teachers tend to appraise both classroom resources and demands in similar ways, making them distinct from those teachers who appraise classroom resources in distinctly different ways than they do classroom demands, placing them into either the Demanded or Resourced groups.

**Table 2**

Teacher outcomes by Appraisal Group.

Appraisal group		Would become a teacher again	Intend to return to teaching next year
Resourced (n = 297)	%	86.5%	87.6%
	SE	3.7	2.9
Balanced (n = 311)	%	72.4%	80.7%
	SE	5.1	4.9
Demanded (n = 136)	%	50.2%	61.4%
	SE	10.1	10.2

#### Data analysis strategy

Given the complex, multistage sampling procedures, the purposeful oversampling, and the varying non-response rates across subgroups of teachers, both the SASS normalized teacher final sampling weight and the replicate weights were applied to all analyses within the AM software package. The occupational commitment and intention to stay variables were cross tabulated with membership in the risk for stress groups to address research question one. The chi square test of association with robust standard errors were calculated. To address research question two, the occupational commitment and intention to stay variables were used as dependent variables, and the risk for stress groups were used as the independent variables. Dummy variables were created for membership in the Demanded and Resourced groups. These variables are coded 0/1, and 1 indicates membership in the respective groups. The baseline condition was membership in the Balanced group.

In order to more accurately evaluate the relationships between stress risk, commitment, and intentions, our analysis also accounted for a series of teacher- and school-level characteristics identified in previous research as being associated with teacher turnover. Numerous studies have emphasized the predictive value of both teacher and workplace characteristics related to teacher retention and attrition (Guarino, Santibanez, & Daley, 2006; Ingersoll, 2001; Miller et al., 1999). Specifically, indicators of teacher qualifications, race, years of experience, and classroom/school context (urbanicity and demography) have demonstrated moderate to strong associations with teachers' professional intentions (Borman & Maritza, 2008). By including these control variables, we are better able to isolate the predictive effects of our primary variables of interest.

The models included the following covariates: urban or rural school setting with suburban as the baseline, alternative certification, had a mentor, male, Hispanic, African-American, school level percentages of children with an IEP, LEP, or FRL eligibility, new to teaching, and years of teaching experience. The percentage of students qualified for free or reduced price lunch through the National School Lunch Program (FRL) was used as a proxy for the poverty level of the children and families served by each school, and for the level of community resources. This particular set of covariates was selected because in previous research with elementary teachers across all grade levels using the 2007–08 SASS dataset, these variables have been associated with the CARD Appraisal Index, membership in the CARD Demanded group, burnout, believe that one would become a teacher again, and intention to return for the following academic year (Lambert et al., in press). While an extensive review of the literature that supports the associations between these variables and both teacher stress and teacher occupational concerns is beyond the scope of the present study, the reader is also referred to a meta-analysis of various studies that used the CARD scoring protocol to examine teacher stress and coping issues (McCarthy et al., 2016) for a more complete review of the research literature. Robust logistic regression, using both sampling weights and replicate weights, was used to estimate the odds of being in the focal category (1) for each of the dependent variables while controlling for the associations between the covariates and the dependent variables.

**Table 3**  
Logistic regression predicting probability of teacher reporting they would become a teacher again.

	Coefficient	SE	t	Odds ratio	95% confidence interval	
Constant	0.421	0.555	0.759	1.523	0.513	4.521
Urban	0.450	0.473	0.953	1.568	0.621	3.963
Rural	0.337	0.431	0.782	1.401	0.602	3.260
Alt. Cert.	-0.223	0.835	-0.267	0.800	0.156	4.111
Had a mentor	0.246	0.515	0.477	1.279	0.466	3.509
Male	1.294	5.700	0.227	3.647	0.000	259,367.175
Hispanic	-0.321	0.963	-0.333	0.725	0.110	4.790
African American	-0.314	0.895	-0.350	0.731	0.126	4.222
IEP	-0.005	0.014	-0.320	0.995	0.968	1.023
LEP	-0.005	0.010	-0.477	0.995	0.976	1.015
FRL	0.005	0.007	0.641	1.005	0.991	1.019
New to teaching	0.548	0.612	0.895	1.730	0.521	5.740
Years of experience	0.008	0.016	0.508	1.008	0.977	1.040
Demanded group	-1.126	0.516	-2.180 <sup>a</sup>	0.324	0.118	0.892
Resourced group	0.960	0.465	2.062 <sup>a</sup>	2.612	1.050	6.497

<sup>a</sup> p < .05.

## Results

Table 2 displays the results of testing the first research question. There was a statistically significant association between risk for stress and occupational commitment ( $\chi^2_{(2)} = 65.275, p < .001$ ). Teachers in the Resourced group were much more likely to indicate that they would become a teacher again (86.5%) compared to 72.4% for the Balanced group and 50.2% for the Demanded group. Similarly, there was a statistically significant association between risk for stress and reported intention to stay in teaching ( $\chi^2_{(2)} = 38.881, p < .001$ ). Teachers in the Resourced group were much more likely to indicate that they would remain in the teaching profession for the next academic year (87.6%) compared to 80.7% for the Balanced group and 61.4% for the Demanded group.

Tables 3 and 4 display the results of the logistic regression analyses to examine research question 2. None of the covariates demonstrated a statistically significant relationship with occupational commitment. The tables include both the model coefficients and the odds ratios. Odds ratios of one indicate that there is no relationship between the predictor variable and the outcome. Odds ratios greater than 1 indicate how much more likely teachers are to endorse the survey response outcome of interest for every increase of one unit in the predictor. Similarly, odds ratios below one indicate how much less likely teachers are to endorse the survey response outcome of interest for every increase of one unit in the predictor variable. Teachers in the Demanded group were slightly less than one third as likely to report they would become a teacher again than teachers in the Balanced group and this relationship was

statistically significant ( $p = .032$ , odds ratio = 0.324). Teachers in the Resourced group were 2.6 times more likely to report they would become a teacher again than teachers in the Balanced group ( $p = .042$ , odds ratio = 2.612) and this relationship was statistically significant.

The pattern of results was similar for intention to stay in teaching (see Table 4). None of the covariates had a statistically significant relationship with intention to remain. Teachers in the Demanded group were one third as likely to report they would stay in the field ( $p = .053$ , odds ratio = 0.327) compared to the Balanced group, although this relationship did not reach statistical significance. Teachers in the Resourced group were almost twice as likely to report they would stay in teaching as teachers in the Balanced group ( $p = .173$ , odds ratio = 1.963), although this relationship also did not reach statistical significance.

## Discussion

Occupational stress is widely recognized as part of the teaching profession. However, much of the extant research on the topic does not include strategies for measuring individual teacher appraisals of the magnitude of classroom demands as compared to the sufficiency of available resources (Meurs & Perrew, 2011). This study added to the literature on stress for early childhood teachers by demonstrating, with a nationally representative sample, that the overwhelming majority of kindergarten teachers who perceive resources as sufficient to meet classroom demands also report they would become a teacher again if starting their career over (86.5%). Similarly, the majority of early

**Table 4**  
Logistic regression predicting probability of teacher reporting they intend to return next year.

	Coefficient	SE	t	Odds ratio	95% confidence interval	
Constant	0.350	0.705	0.496	1.419	0.356	5.651
Urban	0.450	0.611	0.737	1.568	0.474	5.194
Rural	0.421	0.434	0.970	1.523	0.651	3.567
Alt. Cert.	-0.506	0.700	-0.723	0.603	0.153	2.377
Had a mentor	0.398	0.509	0.782	1.489	0.549	4.038
Male	0.875	4.394	0.199	2.399	0.000	13,190.340
Hispanic	-0.025	0.842	-0.029	0.975	0.187	5.080
African American	-0.043	2.114	-0.020	0.958	0.015	60.367
IEP	-0.004	0.020	-0.194	0.996	0.958	1.036
LEP	-0.004	0.010	-0.460	0.996	0.977	1.016
FRL	0.005	0.007	0.633	1.005	0.991	1.019
New to teaching	0.467	0.644	0.724	1.595	0.451	5.636
Years of experience	0.044	0.028	1.606	1.045	0.989	1.104
Demanded group	-1.117	0.570	-1.959 <sup>a</sup>	0.327	0.107	1.000
Resourced group	0.622	0.453	1.374	1.863	0.767	4.526

<sup>a</sup> p = .054.

childhood teachers in this sample who reported sufficient resources also reported an intention to remain in the profession the following school year (87.6%). However, of kindergarten teachers who appraised resources as insufficient to meet classroom demands, only 50.2% reported they would become teachers again, and only 61.4% reported they intended to remain in the profession.

While some early childhood teachers thrive in the classroom, many are exposed to work-related stressors that are sustained for long periods of time, which can lead to burnout, reduced job satisfaction (Gilbert, Adesope, & Schroeder, 2014), impaired teaching effectiveness, and difficulties with classroom management (Aloe, Shisler, Norris, Nickerson, & Rinker, 2014). The primary aim of this study was to investigate the association between risk for occupational stress and occupational commitment and intention to remain in teaching among U.S. kindergarten teachers. Overall, the results support previous findings that risk for stress among elementary and secondary teachers is meaningfully related to their occupational commitment and intention to remain in the profession (Fitchett et al., 2017; Lambert et al., in press), and extend these findings to a more recent sample of kindergarten teachers. Specifically, analyses related to the first research question showed that kindergarten teacher's occupational stress risk classification was related to both their level of occupational commitment and their intention to remain in teaching. Kindergarten teachers classified as being at high risk for experiencing symptoms of occupational stress (i.e., Demanded) tended to have the lowest levels of occupational commitment and weakest intentions to remain in teaching. These findings are supported by previous literature, which tends to suggest that teacher stress is inversely related to occupational commitment and is linked to a heightened desire to leave the profession (Jepson & Forrest, 2006; Klassen & Chiu, 2011).

Furthermore, multivariate modeling confirmed these findings for occupational commitment, even when controlling for a range of covariates. To investigate the second research question, we controlled for a series of teacher- and school-level factors that could reasonably be expected to impact teacher commitment and/or intention to stay in teaching. While similar patterns of associations between stress risk classification and both dependent variables were identified following the inclusion of covariates, only those relationships related to occupational commitment were statistically significant. Results suggest that kindergarten teachers who are at greatest risk for stress are least likely to reflect positively upon their career choice to become an educator. The presence of significant relationships between risk for stress and occupational commitment, but not between risk for stress and intention to stay, is in line with some models of attrition. Specifically, some researchers view the relationship between occupational commitment and intention to quit as a causal one, with low commitment leading to intentions to quit, which subsequently leads to a series of actions (career exploration, job search, interviewing, etc.) that culminate in actual attrition (Allen & Meyer, 1990; Hackett et al., 2001; Mowday, Porter, & Steers, 1982). Due to the cross-sectional design of this study, we were unable to examine causality; however, future research could explore the causal links between the study variables.

A consistent feature of much of the current educational policy literature is a reliance on educational production function models, which examine various inputs (salary, working conditions) that are presumed to result in outputs, such as job satisfaction and occupational commitment (Hanushek, 2008; Monk, 1989). This study presented evidence for the value of careful and methodologically sound examination of the internal, psychological processes through which early childhood teachers appraise their working conditions. This study contributes to a growing body of evidence for a theoretically derived developmental continuum that outlines the process that teachers pass through as they adjust to, commit to, or leave the teaching profession (Lambert et al., in press). This process begins with appraising both classroom demands and resources, and when a perceived imbalance is experienced whereby classroom resources are appraised as insufficient to meet demands, the

risk for occupational stress is enhanced. When teachers experience the stress response over a sustained period of time, burnout symptoms can emerge. These symptoms when sustained can in turn lead to questioning one's commitment to the teaching profession, exploring the possibility of a career change, and ultimately to the decision to leave teaching.

According to components of the transactional model of stress and coping (Lazarus & Folkman, 1984), teacher appraisals of classroom demands and resources can provide school administrators and educational policymakers with a useful and accessible framework for understanding the internal psychological processes that can contribute to individual teachers making a decision to leave the profession. This study demonstrated that the CARD classification protocol can offer school leaders a simple and accessible mechanism to identify which teachers are most at risk for occupational stress and early exit from the profession, and replicated previous findings that showed how teachers classified in the Demanded group were more likely to report reduced occupational commitment (McCarthy et al., 2016). These findings suggest school leaders can attempt to proactively address attrition on a local level by specifically targeting those teachers classified as Demanded, providing them with improved classroom resources and mitigating classroom demands, thereby improving their workplace perceptions. For example, the demands side of the appraisal equation could be partially addressed through administrators paying careful attention to the makeup of teachers' classrooms, with a goal of limiting the concentration of potentially challenging students (children with problem behaviors, developmental delays, or learning disabilities; dual language learners; children from economically disadvantaged families; etc.) assigned to a Demanded teacher. Administrators can also pay close attention to simply equalizing the classroom concentration levels of children with the most demanding special needs. Teachers of young children can recognize, from the first week of school, how comparably demanding the classrooms of children are across the school and can be particularly sensitive to being assigned what they perceive to be higher concentrations of the most challenging children than their peers.

With regard to resources, teachers with a high proportion of students identified as having special needs, for example, would be ideal candidates for receiving additional supports, training in practical teaching strategies, and specialized materials. Additionally, it is possible for further classification within the Demanded group; namely, administrators may be able to identify not only those teachers most at risk for stress, but those whose appraisal ratios are most likely amenable to positive change. This may involve evaluating and monitoring teacher attitudes and perceptions. This triage of resources and administrative attention could be fiscally advantageous, seeing as administrators could theoretically decrease the hemorrhaging of teachers by allocating highly limited resources to just a subset of the workforce (i.e., those in the Demanded group).

This study was limited in scope in that it did not focus on structural features of the school or school system, or on state policy climate issues that may be associated with the occupational health of early childhood teachers. Future research could include multiple indicators of school climate and structural characteristics, in combination with a focus on teacher perceptions of classroom resources and demands, to pursue a richer investigation of teacher stress in the early childhood workforce. In addition, employing a wider range of outcome measures, including perceived stress, health and wellness, physiological markers of the stress response and specific stress symptoms, job satisfaction, and burnout symptoms could contribute to our growing understanding of the factors that lead to diminished occupational commitment and ultimately to the decision to leave teaching altogether. Furthermore, the current study used teachers' intention to return to teaching for the coming academic year as a proxy for dissatisfaction and actual attrition. Future research will need to confirm the findings of the current study with longitudinal data, such as that available from the SASS Beginning Teacher Longitudinal Study, to examine associations with actual exit

from the professional as an outcome.

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