Identification of Elementary Teachers’ Risk for Stress and Vocational Concerns Using the National Schools and Staffing Survey

Richard G. Lambert
University of North Carolina at Charlotte

Christopher J. McCarthy
University of Texas at Austin

Paul G. Fitchett
University of North Carolina at Charlotte

Sally Lineback

Jenson Reiser
University of Texas at Austin


Abstract: Transactional models of stress suggest that elementary teachers who appraise classroom demands as higher than classroom resources are more vulnerable to stress and likely to experience vocational concerns. Previous research using the Classroom Appraisal of Resources and Demands (CARD), a measure designed to assess teacher perceptions of classroom demands and resources, has...
supported transactional models with local samples. The current study replicated this previous research with two waves of large nationally representative data from the Schools and Staffing Survey (1999-2000 and 2007-2008). Theoretically-predicted differences were found, suggesting that an understanding of individual elementary teachers’ perceptions of demands and resources in the classroom could have important implications for policy and research aimed at addressing teachers’ vocational concerns.

**Keywords:** teacher; stress; appraisals; vocational concerns; job satisfaction; retention

El Uso de las **National Schools and Staffing Survey** para Identificar el Riesgo de Estrés y Preocupaciones Profesional de Maestros de Primaria

**Resumen:** Los modelos transaccionales de estrés sugieren que los maestros de primaria que consideran que las demandas de aula son mayores que los recursos que reciben se enfrentan a un mayor riesgo de estrés y son más propensos a tener inquietudes vocacionales. La investigación anterior utilizando la Evaluación de los Recursos y la Demanda en el Aula (CARD por sus siglas en Inglés), un sistema diseñado para evaluar la opinión de los profesores sobre las demandas y recursos, es compatible con los modelos transaccionales con muestras locales. Esta investigación replicó la investigación anterior utilizando dos grupos de datos representativos a nivel nacional de las *Schools and Staffing Survey* (1999-2000 y 2007-2008). Se encontraron diferencias previstas en teoría, lo que sugiere que entender las opiniones individuales de los maestros de primaria sobre las demandas y recursos en el aula puede tener implicaciones importantes para la política educativa y de investigación que tiene como objetivo hacer frente a las preocupaciones de formación profesional de los docentes.

**Palabras-clave:** maestros; el estrés; opiniones; inquietudes vocacionales; satisfacción laboral; retención

Usando o **National Schools and Staffing Survey** para Identificar o Risco de Estresse e Preocupações Vocacionais em Professores de Ensino Primário

**Resumo:** Modelos transacionais de estresse sugerem que professores de ensino primário que consideram que as demandas da sala de aula são maiores do que os recursos que eles recebem enfrentam um risco maior de estresse e são mais prováveis de terem preocupações vocacionais. Pesquisas anteriores usando a Avaliação de Recursos e Demanda da Sala de Aula (CARD por sua sigla em inglês), um sistema criado para avaliar a opinião dos professores sobre demandas e recursos, apoia modelos transacionais com amostras locais. Esta pesquisa reproduziu a pesquisa anterior usando dois grupos de dados representativos nacionais da *Schools and Staffing Survey* (1999-2000 e 2007-2008). Diferenças teoricamente que tinham sido previstas foram encontradas, sugerindo que compreender as opiniões individuais de professores de ensino primário sobre demandas e recursos na sala de aula pode ter consequências importantes para políticas e pesquisas educativas que tem como objetivo lidar com preocupações vocacionais de professores.

**Palavras-chave:** professores; estresse; avaliações; preocupações vocacionais; satisfação profissional; retenção

Kyriacou and Sutcliffe (1977) defined teacher stress as “a response by a teacher of negative affect …as a result of the demands made upon the teacher in his role as a teacher” which is determined by “the degree to which the teacher perceives that he is unable to meet the demands made upon him” (p. 299). While this definition emphasizes teachers’ perceptions of the classroom, in subsequent years research has taken an education production function approach (Hanushek, 2008; Monk, 1988) by focusing on external workforce factors (Zellars, hochwarter, & perrewe”, 2004) such as having larger classes (French, 1993) and excessive administrative burdens (Lambert &
Ullrich, 2012; Moriarty, Edmonds, Blatchford, & Martin, 2001). This approach is followed in research on teacher job satisfaction and retention research as well (cf. Ingersoll, 2001; Liu, 2007; Liu & Ramsey, 2008). The resulting line of inquiry follows the historical trend of educational policy analysis and research by examining “inputs” (class size, administrative climate) that are presumed to lead to certain teacher “outputs,” such as level of satisfaction and occupational commitment. This approach, while valuable, neglects consideration of the psychological factors associated with teachers’ everyday experience of their classrooms.

Incorporating the predominant model of stress, transactional theory (Lazarus & Folkman, 1984), we conceptualize teacher stress as caused by a perceived imbalance of teachers’ classroom demands and resources. Meyer (2003) noted that early stress researchers such as Wheaton (1999) used an engineering analogy for stress, “explaining that stress can be assessed as a load relative to a supportive surface” (p. 675). How people appraise their “load” relative to support is a key determinant of vulnerability to stress and recent research has examined the role of appraisals that teachers make of their classroom (Chang, 2009; Chang & Davis, 2009; Kokkinos, Panayiotou, & Davazoglou, 2005). However, much of this research fails to capture the central proposition of transactional models: teacher perceptions of classroom demands vis-à-vis perceived classroom resources are what puts them at risk for stress (Moore, 2006). In other words, it is not appraisals of high demands alone that are hypothesized to lead to stress, but rather a teacher’s perceptions that the level of demands exceeds their perceived classroom resources. Accounting for such factors could lead to a better understanding of why some teachers are more vulnerable to stress than others when experiencing the same workforce realities.

Lambert, McCarthy, O’Donnell, and Wang (2009) developed the Classroom Appraisal of Resources and Demands (CARD) to measure both classroom demands and resources with the goal of identifying which elementary teachers view demands as outstripping their classroom resources. The CARD was originally developed for elementary teachers because they are more likely than teachers at other levels to spend most of their workday in the same classroom with the same students, allowing for a more stable context in which demands and resources can be assessed (McCarthy, Lambert, O’Donnell, & Melendres, 2009). A recent meta-analysis of 18 CARD studies using a range of local samples of teachers (many of them elementary level) across various districts and states provided evidence that the CARD measures teachers’ appraisals of their classroom demands and resources reliably (McCarthy, Lineback, Lambert, Allender, Reiser, & Murphy, 2014). Further, the validity of the transactional approach for assessing elementary teachers’ risk for stress was supported with consistent findings in these studies that elementary teachers perceiving the highest levels of demands with respect to classroom resources were also likely to experience concerns related to student behaviors, report more job dissatisfaction, and less occupational commitment (McCarthy, Lambert, & Reiser, 2014). In other words, such teachers are more likely to report the symptoms associated with stress.

This study examined whether transactional stress research with local samples of elementary teachers using the CARD can be replicated nationally. Fortunately, the Schools and Staffing Survey (SASS) dataset contains many items similar to the CARD Demands and Resources scale. Administered by the National Center for Education Statistics, SASS is the largest and most comprehensive data source available on teachers and schools (Ingersoll & Smith, 2003). Items from the SASS survey addressing similar classroom demands and resources to those measured in the CARD were identified, and this information was used to classify teachers according to stress vulnerability. In addition to surveying teachers about classroom demands and resources, which allows for a replication of the CARD classification strategy, the SASS also includes questions about teachers’ vocational concerns (specifically, questions about intentions to remain in teaching, job
security and job satisfaction), classroom characteristics (specifically, questions about class size and composition), and professional autonomy. Examination of whether teachers classified according to level of risk (i.e., vulnerability) for stress was associated with scores on these constructs was considered evidence of stress symptoms and therefore formed the basis for three main research questions investigated.

**Background**

**Examining Teacher Perceptions Using the Transactional Model**

The CARD was developed to measure teachers’ appraisals of both classroom demands and resources in order to operationalize transactional models of stress (Lambert et al., 2009). Teachers are classified into three groups based on their responses to the CARD: (1) those perceiving classroom resources as greater than demands (labeled the Resourced group), (2) those perceiving classroom demands as equal to resources (labeled the Balanced group), and (3) those perceiving classroom demands as greater than resources (labeled the Demands group). According to transactional models of stress, this last group is theorized to most likely to experience stress symptoms (McCarthy, Lambert et al., 2014; McCarthy, Lineback et al., 2014). This process is represented in Figure 1.

![Figure 1. Hypothesized model of teacher risk for stress](image)

As can be seen in the Figure, elementary teachers appraising overall classroom resources as equal to, or exceeding classroom demands, are hypothesized as less vulnerable to stress symptoms. Such teachers are predicted to report higher levels of satisfaction and occupational commitment. As will be described further, a similar pattern for professional autonomy is hypothesized in this study.
Conversely, teachers appraising overall classroom resources as insufficient for classroom demands are hypothesized to be most vulnerable to stress symptoms (McCarthy et al., 2009).

As was noted above, a unique feature of the CARD is that it operationalizes transactional models by accounting for perceived imbalances in teachers’ classroom demands. This is accomplished by creating a score for each teacher based on the difference between the Demands and Resources scale scores. This is labeled an Appraisal Index, as it represents the teachers’ overall appraisal of whether their classroom resources are sufficient for the magnitude of classroom demands (McCarthy, Lambert et al., 2014). The Appraisal Index therefore serves as a measure of the extent to which teachers experience demand imbalance in their classroom at the level of specific demands and resources, allowing for a more granular understanding of their everyday classroom experience.

In this approach to understanding teacher stress, appraisals are seen as central to understanding why some elementary teachers become dissatisfied with teaching and consider leaving the profession (Folkman & Moskowitz, 2004; McCarthy, Lineback et al., 2014). In the context of this study, it is expected that teachers classified in the Demands group will be more likely to report (a) being dissatisfied with their jobs, (b) more vocational concerns, and (c) lower levels of professional autonomy.

Given that research with the CARD has only been conducted with local samples of elementary and secondary teachers (McCarthy, Lineback et al., 2014), an important question is whether support for transactional models using this methodology can be found in a national sample. The similarity of the SASS to variables investigated in CARD research allowed us to replicate of the classification strategy used to place teachers in the three Appraisal groups: Demands, Balanced, and Resourced. Both the 1999-2000 and 2007-2008 SASS surveys were used in this study because there is some evidence that increased high-stakes testing and accountability brought on by No Child Left Behind (NCLB) has led to increased stressors and demands on many teachers (Berryhill, Linney, & Fromewick, 2009; Grissom, Nicholson-Crotty, & Harrington, 2014). Utilizing the 2000 and 2008 surveys provided information about teachers’ perceptions of classrooms, both before and after implementation of the No Child Left Behind Act. The 2007-2008 timeframe was also important to include as it is contemporaneous with recent CARD studies (c.f. McCarthy et al., 2009; McCarthy, Lambert, Crowe, & McCarthy, 2010). The rationale for examining Appraisal group differences in risk for stress with SASS questions about teachers’ vocational concerns, classroom characteristics, and autonomy, which formed the three main research questions in this study, will be provided next.

Teacher Vocational Concerns

Ingersoll (2012) noted the United States currently has a significant teacher turnover problem, and labeled the phenomenon of early career teachers exiting as the “greening” of the field. Ingersoll also posited that this greening is mostly due to teacher dissatisfaction and the pursuit of other employment, despite new teachers being hired at an accelerated pace. This attrition rate is considerably higher than other professional occupations (Ingersoll, 2003) and has a detrimental impact on students, teachers, and the overall school climate (Béteille & Loeb, 2009; Guin, 2004; Hong, 2012; Johnson, Craft & Papay, 2012; Ronfeldt, Loeb, & Wyckoff, 2013).

The greening problem may be explained, at least partially, by falling levels of teacher satisfaction. According to the Metlife Survey of the American Teacher (2012), teacher satisfaction has fallen to a 25-year low: only 39% of respondents report that they are very satisfied. In general, job satisfaction research conceptualizes the construct as either overall satisfaction (usually only one question on a survey), or as a construct involving multiple components, including satisfaction with

---

1We will hereafter refer to these datasets as the 2000 SASS and the 2008 SASS.
salary, promotion, working conditions, benefits, and organizational climate (Koeske, Kirk, Koeske, & Rauktis, 1994; Liu & Ramsey, 2008).

Not surprisingly, research using the SASS has consistently demonstrated that satisfaction is related to both intentions to leave and attrition itself. Ingersoll (2001) used the 1990-1991 SASS and the 1991-1992 Teacher Follow-Up Survey to show that job dissatisfaction, or the desire to pursue other employment, accounted for most of the variance in why teachers left their teaching positions. Another more recent study using SASS data found that a teacher’s job satisfaction was the most significant predictor of a teacher’s intentions to stay in teaching (Tickle, Chang, & Kim, 2011).

Surprisingly, however, we found scant research using the SASS to evaluate the role of stress in teacher dissatisfaction or intention to leave the field. Grissom et al. (2014) used the SASS data to investigate teacher work environments across several administrations of the SASS and defined teacher demands as the number of hours in the week teachers spend working and support from the school, but did examine teacher resources. Interestingly, they found that while teachers’ reported weekly work increased 2 hours between 2000 and 2004 (just before No Child Left Behind was enacted), work hours leveled off between 2004 and 2008. This suggests teacher work hours have not necessarily increased since the Act was implemented.

Transactional theorists would suggest that teachers’ appraisals of the classroom environment could explain why some teachers become dissatisfied and make plans to leave the profession (McCarthy, Lineback, et al., 2014). A primary question in this study, therefore, is whether teachers classified in the Demands group report more vocational concerns, which are defined as teachers’ dissatisfaction with, and intention to leave, the teaching profession (McCarthy, Lambert et al., 2014). Research using the CARD (McCarthy, Lineback, et al., 2014) with local samples has consistently demonstrated that teachers classified in the Demands group report more job dissatisfaction and lowered occupational commitment (Lambert, McCarthy, McCarthy, Crowe, & Fisher, 2012; McCarthy et al., 2009; McCarthy, Lambert, O’Donnell, Villarreal, & Melendres, 2012; McCarthy, Lambert et al., 2014). Further, although based on correlational analyses, one study found that teachers classified in the Demands group reported lowered satisfaction, which in turn was associated with more plans to leave the profession (McCarthy, Lambert, Crowe, & McCarthy, 2010). In other words, teachers’ appraisals of high demand vis-à-vis their resources could be antecedent to, and possibly be the reason for, higher levels of dissatisfaction. Therefore a primary goal of this study was replication of our findings connecting teacher’s risk for stress and vocational concerns with the SASS.

**Classroom Structural Characteristics and Student Behavioral Tendencies**

Though salary is frequently referenced as a substantial predictor of where and how long one remains in the classroom (Guarino, Santibañez, & Daley, 2006; Hanushek & Rivikin, 2007), Béteille and Loeb (2009) note in their review of educational policy literature that “non-wage characteristics” are important to consider in determining professional trajectory of teachers. Research has specifically connected classroom working conditions and climate to teacher satisfaction, mobility, and attrition (Ingersoll, 2001; Johnson, Berg, & Donaldson, 2005; Simon & Johnson, 2013). Classroom management issues, particularly with respect to student behavior, is a common source of teacher stress (Chang, 2009; Eskridge & Coker, 1985; Lewis, Roache, & Romi, 2011; Sutton, Mudrey-Camino, & Knight, 2009). Here again, it is important to understand which teachers are most vulnerable to stress caused by classroom factors: as Chang asked with respect to stress caused by disruptive behaviors, “how does one teacher manage to survive while another is depleted by it?” (Chang, 2009, p. 202).

Research using the CARD has demonstrated that teachers in the Demands group experience their classrooms differently (McCarthy, Lineback et al., 2014): they perceive more challenges due to
student behavior and tend to report larger classroom sizes. In this replication study, we asked if appraisal group differences (Demands, Balanced, and Resourced) could be found in teachers’ self-reports about classroom characteristics and student behavioral characteristics contained in the 2000 and 2008 SASS. Both the 2000 and 2008 SASS datasets included numerous questions about teachers’ classroom characteristics and the behavioral tendencies of their students (class size, students with learning issues, students with attendance issues, students with problem behaviors, having been attacked or threatened, satisfied with class size, and wasting time as a teacher) and previous studies have examined whether classroom characteristics are linked to teacher turnover. For example, Feng (2010) utilized the 2000 SASS dataset along with a state data set from Florida to show that higher levels of teacher-specific disciplinary incidents were associated with greater levels of teacher turnover. Likewise, Ingersoll and May (2012) found that for both math and science teachers, the incidence of student discipline problems was positively associated with teacher turnover. Examining class size, Scheriff and Hahs-Vaughn (2008) indicated that a minority (40%) of SASS-surveyed English teachers were satisfied with their class size. In a study of teachers in Florida using a statewide data set, teachers who were less experienced (defined as 1-5 years of teaching) had higher percentages of students with Individualized Education Plans and Language Education Plans (Feng, 2010). Once again, however, stress has not been examined as a possible factor in SASS research establishing connections between classroom variables and vocational concerns.

As was noted, studies using the CARD have explored the link between stress and classroom factors by examining whether Demands teachers’ classroom characteristics differ in significant ways from Resourced and Balanced teachers. CARD research on this topic has provided mixed findings: Lambert, McCarthy et al. (2012) found that teachers classified as Resourced reported smaller classrooms and teachers in the Demands group reported greater percentages of students with learning disabilities, problem behaviors, and poor attendance. However, while Lambert, McCarthy, O’Donnell, and Melendes (2007) also found that teachers classified in the Demands group reported more students with problem behaviors and learning disabilities, they found no differences in class size or reported percentages of students who were English language learners or had poor attendance. Given such equivocal findings using the CARD, and the lack of research on teacher stress with the SASS, the current study sought to examine whether differences in classroom characteristics and student behavioral tendencies exist between teachers classified in each of the Appraisal groups using SASS data.

Teacher Autonomy

SASS items related to teacher autonomy allowed for an extension of teacher stress research with an important construct not addressed in prior transactional stress CARD studies. A teacher’s sense of autonomy at work, which entails pedagogical, organizational, principle, and routine decision-making (Friedman, 1999), correlates highly with job satisfaction and other teacher attitudes (Pearson, 1998). Lam and Yan (2011) found that professional autonomy significantly influenced job satisfaction and teaching motivation. Research by Pearson and Moomaw (2005) examined the relationship between teacher autonomy and job stress, work satisfaction, empowerment, and professionalism, and found that as teachers’ autonomy over curriculum increased, job stress decreased. Additionally, Jiang (2005) found that involving teachers in curriculum reform facilitated teachers’ autonomy and reduced levels of burnout.

Research using the SASS has examined two types of autonomy variables: school influence and classroom control. Though they have varying names in the literature, researchers have typically used the same or similar questions from the SASS in order to develop scales around these constructs (e.g. Ingersoll & May, 2012; Jackson, 2012; Liu, 2007).
School influence. Research on school influence using SASS data defines school influence as the perception that teachers have over school policy decisions and involves items relating to teachers’ perceived influence over school-wide issues such as hiring, policies, and non-teaching related duties (Jackson, 2012). Higher levels of school influence have been associated with a greater likelihood of teachers staying in their current positions than either to move schools or leave teaching (Jackson, 2012), with higher retention of specifically math and science teachers (Ingersoll & May, 2012), and with greater intentions of remaining in the teaching profession (Sedivy-Benton, Boden, & McGill, 2012). Liu (2007) also found that having school influence rapidly decreases the attrition rate for first year teachers. Lastly, Price and Collett (2012) conducted a structural equation modeling study using data from elementary teachers in the 2004 SASS dataset. They uncovered a construct operationalized as interdependence (which uses the same questions on the SASS that others have termed “school influence”) was positively related to commitment to stay in the profession directly and also through the additional variables of increased interaction with colleagues, positive affect, enthusiasm, and satisfaction.

Classroom control. Classroom control, also called instructional autonomy, is commonly defined as a teacher’s sense of authority and control over her or his own classroom decision-making, including both teaching and testing (Pearson & Hall, 1993; Pearson & Moomaw, 2005). Ingersoll and May (2012) found that for math teachers, classroom control was the single greatest predictor of a teacher remaining in the same teaching position, higher than school influence. Sedivy-Benton et al. (2012) found that for teachers responding in the 2008 SASS dataset, classroom control was positively associated with intentions of remaining in the teaching profession. Grissom et al. (2014) found that feelings of classroom control have increased overall from 1994-2008, but classroom control has fallen between 2004 and 2008. They also found evidence that NCLB positively affected perceptions of classroom control between 2000 and 2004.

Given that teacher autonomy has not been explored in previous CARD research, the current study examined possible differences in school influence, classroom control, and an overall composite of teacher autonomy (school influence plus classroom control) among the three Appraisal groups. For teachers in the 2000 SASS dataset, both school influence and classroom control were examined. Given that the 2008 SASS did not include the questions comprising the school influence scale, we examined only classroom control for that data set.

Goals of the Current Study

The current study was designed to replicate the three-group classification system used in previous CARD research (Demanded, Balanced, and Resourced) with elementary teachers in the SASS data set. Three questions guided the research:

1. Are Appraisal group differences (Demands, Balanced, and Resourced) observed in questions regarding teachers’ perceived vocational concerns contained in the 2000 and 2008 SASS (specifically, questions relating intentions to remain in teaching, job security and job satisfaction)?

2. Are Appraisal group differences (Demands, Balanced, and Resourced) observed in questions regarding teachers’ classroom characteristics and student behavioral characteristics contained in the 2000 and 2008 SASS?

3. Are Appraisal group differences (Demands, Balanced, and Resourced) observed in questions reporting teachers’ perceived autonomy contained in the 2000 and 2008 SASS?
Methods

Participants and Materials

The participants in this study were elementary teacher respondents to the 2000 and 2008 Schools and Staffing Survey (SASS). As was noted previously, the CARD was originally developed with elementary teachers given their relatively intact classrooms. CARD surveys also include questions about teacher demographic and professional background, certification and training, and professional development activities, and this type of information is summarized for the elementary teacher respondents from the SASS in this study in Table 1. Extensive sets of questions also address classroom organization, available resources, assessment activities, working conditions, school policy and decision-making, and general employment information.

Both waves of the SASS used a complex multi-stage sampling procedure in which buildings were sampled and then samples of teachers were selected from within each sampled school. The SASS was designed to create a nationally representative sample of teachers and to collect data regarding their perceptions of school climate, overall employment and working conditions, and descriptive data about school contexts throughout the nation (NCES, 2007). Low incidence groups of teachers were oversampled.

Since many, though not all, previous CARD studies included full-time elementary school regular classroom teachers, the full SASS teacher data file was reduced to a sample of full-time public school elementary teachers (n=9,300).2 Weighted percentages are reported using the normalized version of the final teacher weight to adjust the sample to be nationally representative of the teacher population at the time the survey responses were collected.

Procedures

First, our research team reviewed items from the Classroom Appraisal of Resources and Demands (CARD) along with items from the SASS Public School Teacher Questionnaire in order to identify items with theoretical, conceptual, and thematic similarity of content. A total of 21 SASS items were identified by overall thematic content as possible matches to the Demands items from the CARD in the 2000 SASS, and 13 items in 2008 SASS (see Appendix B for a list of all items from the SASS selected to match the Demands and Resources scales from the CARD). A total of 15 SASS items were identified as possible matches to the content of items from the Resources section of the CARD in 2000 SASS and 11 items in 2008 SASS and were used to form the Resources scale (see Appendix B).

---

2 All sample sizes were rounded to the nearest 10 in keeping with NCES policies of data disclosure.
Table 1  
Demographic Characteristics of the Samples

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Category</th>
<th>1999-2000 Weighted %</th>
<th>2007-2008 Weighted %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanity of school</td>
<td>Central city</td>
<td>29.3</td>
<td>27.2</td>
</tr>
<tr>
<td></td>
<td>Urban fringe</td>
<td>50.2</td>
<td>49.1</td>
</tr>
<tr>
<td></td>
<td>Small town or rural</td>
<td>20.5</td>
<td>23.6</td>
</tr>
<tr>
<td>Census region</td>
<td>Northeast</td>
<td>18.4</td>
<td>18.9</td>
</tr>
<tr>
<td></td>
<td>Midwest</td>
<td>22.0</td>
<td>21.4</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>38.1</td>
<td>40.8</td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>21.5</td>
<td>19.0</td>
</tr>
<tr>
<td>Ever taught in a private school</td>
<td>Yes</td>
<td>12.8</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>87.2</td>
<td>89.0</td>
</tr>
<tr>
<td>Years of teaching experience</td>
<td>Less than two</td>
<td>7.0</td>
<td>11.4</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>93.0</td>
<td>88.6</td>
</tr>
<tr>
<td>Highest educational degree</td>
<td>Bachelor's only</td>
<td>58.4</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td>Graduate degree</td>
<td>41.6</td>
<td>50.4</td>
</tr>
<tr>
<td>Union member</td>
<td>Yes</td>
<td>80.7</td>
<td>76.8</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>19.3</td>
<td>23.2</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>9.7</td>
<td>15.6</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>90.3</td>
<td>84.4</td>
</tr>
<tr>
<td>Race</td>
<td>Native American</td>
<td>0.8</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Asian or Pacific Islander</td>
<td>2.4</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>8.7</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td>European American</td>
<td>88.0</td>
<td>90.1</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Yes</td>
<td>6.6</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>93.4</td>
<td>92.1</td>
</tr>
</tbody>
</table>

Next, we conducted a content validity study in which we surveyed a panel consisting of educational research experts \((n=5)\), elementary teachers \((n=3)\), and school administrators \((n=4)\). The 12 member panel was provided with the elementary version of the CARD and the proposed items from the SASS. The panel members were asked to indicate the extent to which they agreed that CARD items measured classroom Demands and Resources respectively. They were also asked the extent to which they agreed that the proposed SASS items focused on similar themes to those addressed by the CARD. The panelists were also asked a series of open-ended questions focusing on their general opinions about classroom resources and demands for elementary teachers. Almost all of the panelists \((91.67\%)\) answered “Agree” or “Strongly Agree” to the question about whether CARD Demands items address classroom demands. Similarly, 91.67% of the panelists answered “Agree” or “Strongly Agree” to the question about whether CARD Resources items address classroom resources. A majority of panelists \((72.73\%)\) answered “Agree” or “Strongly Agree” to the
question about SASS demands items being thematically consistent with CARD Demands items. Similarly, a majority of panelists (83.33%) answered “Agree” or “Strongly Agree” to the question about SASS resource items being thematically consistent with CARD Demands items. Based on these results, we proceeded with the development of SASS Demands and Resources scales.

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 to the identified items for each data set into scale scores and estimate ability parameters for each teacher. The scores were scaled to have a mean of 500 and a standard deviation of 100. The resulting Demands and Resources scale scores were moderately correlated in both waves ($r_{2000} = -0.404; r_{2008} = -0.479$). The two waves of data provided scores on the SASS Demands scales that were adequately reliable ($\alpha_{2000} = 0.898; \alpha_{2008} = 0.870$). The two waves of data provided scores on the SASS Resources scales that were adequately reliable ($\alpha_{2000} = 0.837; \alpha_{2008} = 0.832$).

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 in both waves (reliability$_{2000} = 0.906$; reliability$_{2008} = 0.900$). This reliability coefficient is based on the reliability of a difference score. Also following the CARD scoring protocol, a 95% confidence interval was formed around no difference between the Demands and Resources scale scores (McCarthy, Lambert et al., 2014). 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.

The third goal of this study also necessitated scale creation, and SASS items that address teacher perceptions about their autonomy in the school and classroom were formed. For 2000 survey, items reporting teachers’ perceptions on their influence over school-wide issues such as staffing, budgeting, and instructional policy were used to form the School Influence (Cronbach’s alpha=.807) scale score using Rasch IRT modeling. Both surveys include items that address teachers’ perception of control over instructional materials, teaching strategies, and student discipline issues within the classroom. Through the Rasch model, these items were used to form the Classroom Control scale scores (Cronbach’s $\alpha_{2000} = .759$; Cronbach’s $\alpha_{2008} = .726$) scale score. The Rasch model was also used to form the Total Autonomy scale score (Cronbach’s alpha=.830), a total score for the 2000 SASS dataset only.

Given the complex, multi-stage sampling procedures, the purposeful oversampling, and the varying non-response rates across subgroups of teachers, specialized statistical procedures were necessary in order to both weight the results to be nationally representative and to calculate the appropriate standard errors and significance tests. The AM software was used for these purposes. Throughout the results section whenever robust percentages, means, or standard errors are referred to, these values were obtained from AM by using the final teacher sampling weights and the replicate weights with the Balanced Repeated Replication estimation method.

**Results**

Teachers were classified into groups based on their Appraisal index score according to the CARD scoring protocol, as described in the previous section, resulting in the following sample sizes in the three groups the 2000 data: Resourced $n=2,860$ (30.7%), Balanced $n=4,020$ (43.2%), and Demands $n=2,420$ (26.1%). Classification frequencies were similar in the 2008 data: Resourced $n=2,900$ (24.2%), Balanced $n=5,930$ (49.5%), and Demands $n=3,150$ (26.3%). These national data suggest approximately a quarter of elementary teachers can be considered as at risk for occupational
stress. These values reflect the results of the CARD classification strategy when applied to the total sample of teachers across each of the waves. The reported sample sizes may vary from these values in subsequent analyses due to missing data.

**Appraisal Group Differences Across Teachers’ Perceived Vocational Concerns**

Prior to examining our research questions, we investigated whether there were differences between the three teacher stress groups according to location of the teacher’s school. Using the 2000 SASS data, the weighted results indicate that there were statistically significant associations between membership in the three stress groups and both census region ($\chi^2(6) = 108.59, p < .000$) and urbanicity ($\chi^2(4) = 217.55, p < .000$) of school location. Of teachers working in urban schools, 34.3% of them were in the Demands group and 20.9% were in the Resourced group. In contrast, only 20.4% of teachers in suburban schools were in the Demands and 34.3% were in the Resourced group. Similarly, in rural schools 23.3% of teachers were in the Demands group and 27.9% were in the Resourced group. For teachers working in the Northeast, 35.9% were in the Resourced group and 22.3% were in the Demands group. A similar pattern was found in the Midwest where 32.5% were in the Resourced group and 19.9% were in the Demands group. However, in the South and West, the pattern was quite different. In the South, 27.4% were in the Resourced group and 27.7% were in the Demands group. In the West, 22.8% were in the Resourced group and 27.7% were in the Demands group.

Similar patterns were found when using the 2008 SASS data. The weighted results indicate that there were statistically significant associations between membership in the three stress groups and both census region ($\chi^2(6) = 96.60, p < .000$) and urbanicity ($\chi^2(4) = 424.03, p < .000$) of school location. Of teachers working in urban schools, 38.3% of them were in the Demands group and 16.9% were in the Resourced group. In contrast, only 21.7% of teachers in suburban schools were in the Demands and 31.1% were in the Resourced group. Similarly, in rural schools 25.6% of teachers were in the Demands group and 23.0% were in the Resourced group. For teachers working in the Northeast, 32.1% were in the Resourced group and 24.0% were in the Demands group. In the Midwest where 25.7% were in the Resourced group and 24.0% were in the Demands group. In the South, 24.5% were in the Resourced group and 27.6% were in the Demands group. In the West, 22.2% were in the Resourced group and 31.9% were in the Demands group.

We addressed the first research question by investigating Appraisal group differences in vocational concerns (see Table 2 for SASS items utilized in these analyses). Each of these SASS items was used as an outcome measure to test for differences between the three CARD Appraisal groups. Given previous findings with the CARD, we hypothesized that teachers in the Demands group would rate their occupational conditions more negatively than their colleagues in the other Appraisal groups.

As can be seen in Table 2, there were statistically significant and large differences in the expected directions between the Demands and the two other Appraisal groups on outcomes for vocational concerns for both the 2000 and the 2008 data sets. Several of the SASS questions show in Table 2 focused specifically on retention issues, and teachers in the Demands group were much less likely to report they would become a teacher again (75.3% for 2000 SASS and 76.6% for 2008 SASS) than those classified in the Resourced group (94.3% for 2000 SASS and 94.5% for 2008 SASS) and much less likely to report they would return to teaching the next year (65.1% for 2000 SASS and 67.2% for 2008 SASS) than Resourced teachers (86.0% for 2000 SASS and 85.2% for 2008 SASS). Teachers in the Demands group were also more likely to agree or strongly agree that they were worried about their job security than their peers in the Balanced or Resourced group (see Table 2).
SASS questions asking about satisfaction and wasting time as a teacher also revealed large differences between the Appraisal groups. While overall most teachers in both the 2000 and 2008 SASS reported they were at least somewhat satisfied with their jobs, an inspection of Table 2 reveals that the modal response of teachers in the Resourced and Balanced groups was “Strongly agree” while for Demand teachers it was “Somewhat agree.” While only the 2000 SASS included questions about satisfaction with class size and perceptions of wasting time as a teacher, once again the modal response of teachers in the Resourced and Balanced groups was “Strongly agree” while the Demands group was evenly split between “Strongly” and “Somewhat” agree for satisfaction with class size. Teachers in the Demands group were also much more likely to report feeling like they were wasting time as a teacher.
Table 2.
Teacher Vocational Satisfaction by Appraisal Group

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
<th>2000 SASS</th>
<th>2008 SASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Resourced Group</td>
<td>Balanced Group</td>
</tr>
<tr>
<td>Would become a teacher again</td>
<td>Yes</td>
<td>Weighted % 94.3</td>
<td>85.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 0.67</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Weighted % 5.7</td>
<td>14.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 0.67</td>
<td>0.62</td>
</tr>
<tr>
<td>Will return to teaching next year</td>
<td>Yes</td>
<td>Weighted % 86.0</td>
<td>77.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 0.95</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Weighted % 14.0</td>
<td>22.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 0.95</td>
<td>0.93</td>
</tr>
<tr>
<td>Worried about job security</td>
<td>Strongly agree</td>
<td>Weighted % 5.0</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 0.63</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>Somewhat agree</td>
<td>Weighted % 18.9</td>
<td>25.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 1.06</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td>Somewhat disagree</td>
<td>Weighted % 22.9</td>
<td>32.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 1.08</td>
<td>0.92</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Weighted % 53.3</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se 1.34</td>
<td>1.03</td>
</tr>
</tbody>
</table>
Table 2. (Cont’d)
Teacher Vocational Satisfaction by Appraisal Group

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
<th>2000 SASS</th>
<th>2008 SASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Resourced Group</td>
<td>Balanced Group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n=2,310</td>
<td>n=3,880</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n=3,090</td>
<td>n=5,660</td>
</tr>
<tr>
<td>Satisfaction with</td>
<td>Strongly agree</td>
<td>Weighted %</td>
<td>88.3</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.88</td>
<td>1.22</td>
</tr>
<tr>
<td></td>
<td>Somewhat agree</td>
<td>Weighted %</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.85</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>Somewhat disagree</td>
<td>Weighted %</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.11</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Weighted %</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>Satisfaction with class size*</td>
<td>Strongly agree</td>
<td>Weighted %</td>
<td>53.0</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>1.40</td>
<td>0.92</td>
</tr>
<tr>
<td></td>
<td>Somewhat agree</td>
<td>Weighted %</td>
<td>27.1</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>1.00</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>Somewhat disagree</td>
<td>Weighted %</td>
<td>11.4</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.80</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Weighted %</td>
<td>8.4</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.71</td>
<td>0.65</td>
</tr>
</tbody>
</table>
Table 2. (Cont’d)

Teacher Vocational Satisfaction by Appraisal Group

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
<th>2000 SASS</th>
<th>2008 SASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Resourced Group</td>
<td>Balanced Group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n=2,310</td>
<td>n=3,880</td>
</tr>
<tr>
<td>Wasting time as a teacher*</td>
<td>Strongly agree</td>
<td>Weighted %</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td></td>
<td>0.28</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>Weighted %</td>
<td>3.6</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.52</td>
<td>0.71</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>Weighted %</td>
<td>6.8</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.63</td>
<td>0.83</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>Weighted %</td>
<td>88.2</td>
<td>68.4</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.88</td>
<td>1.01</td>
</tr>
</tbody>
</table>

* Denotes items that appeared on the 2000 SASS only
Appraisal Group Differences among Classroom and Student Behavioral Characteristics

Table 3 provides results for questions about whether teachers were ever threatened or attacked from the 2000 and the 2008 SASS data sets, and it is clear from these results that teachers classified in the Demands group were much more likely to report both. The 2000 SASS included questions about attendance problems (tardiness) and behavior problems (interruptions) (see Table 4). The following differences between the Demands and Resourced groups, reported as effect sizes, were found: tardy students \((d = .711)\), and interruptions due to problem behaviors \((d = .550)\). The 2008 SASS did not include these questions. Both the 2000 and the 2008 SASS data sets also included questions about classroom size, number of students with an Individualized Education Plan (IEP), and number of Limited English Proficiency (LEP) students. In Table 4, statistically significant differences between the three Appraisal groups are shown across each classroom variable for the 2000 SASS.

All the differences indicated higher concentrations of demanding student behaviors and students with an IEP or LEP in the classrooms of Demands teachers. The following differences between the Demands and Resourced groups, reported as effect sizes, were found: class size \((d = .142)\), children with an IEP \((d = .182)\), children with an LEP \((d = .396)\). The 2008 SASS also included these questions, but differences were only found for children designated LEP \((d = .467)\).
Table 3.
*Teacher Experience with Threatening Behavior by Appraisal Group*

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
<th>2000 SASS</th>
<th>2008 SASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Resourced Group</td>
<td>Balanced Group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n=2,310</td>
<td>n=3,880</td>
</tr>
<tr>
<td>Ever threatened</td>
<td>Yes</td>
<td>Weighted %</td>
<td>7.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Weighted %</td>
<td>92.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se</td>
<td>0.62</td>
</tr>
<tr>
<td>Ever attacked</td>
<td>Yes</td>
<td>Weighted %</td>
<td>7.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Weighted %</td>
<td>92.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robust se</td>
<td>0.68</td>
</tr>
</tbody>
</table>
### Table 4. 
*Classroom Structural Characteristics and Behavioral Tendencies*

<table>
<thead>
<tr>
<th>2000 SASS</th>
<th>Resourced Group (R)</th>
<th>Balanced Group (B)</th>
<th>Demands Group (D)</th>
<th>Demands vs. Resourced</th>
<th>Contrasts</th>
<th>F</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class size</td>
<td>Unweighted mean</td>
<td>20.247</td>
<td>20.626</td>
<td>20.844</td>
<td>D &gt; R,B</td>
<td>3.789*</td>
<td>0.142</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>20.843</td>
<td>21.084</td>
<td>21.737</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>5.602</td>
<td>14.307</td>
<td>6.944</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.158</td>
<td>0.509</td>
<td>0.279</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students with an IEP</td>
<td>Unweighted mean</td>
<td>2.649</td>
<td>2.896</td>
<td>3.367</td>
<td>D &gt; B &gt; R</td>
<td>8.807***</td>
<td>0.182</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>2.687</td>
<td>2.929</td>
<td>3.353</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>3.293</td>
<td>3.502</td>
<td>4.034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.093</td>
<td>0.078</td>
<td>0.119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEP students</td>
<td>Unweighted mean</td>
<td>1.592</td>
<td>2.426</td>
<td>3.636</td>
<td>D &gt; B &gt; R</td>
<td>27.624***</td>
<td>0.396</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>1.453</td>
<td>2.153</td>
<td>3.547</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>3.793</td>
<td>4.86</td>
<td>6.547</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.107</td>
<td>0.118</td>
<td>0.278</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tardy students</td>
<td>Unweighted mean</td>
<td>1.867</td>
<td>2.639</td>
<td>3.7</td>
<td>D &gt; B &gt; R</td>
<td>121.411***</td>
<td>0.711</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>1.869</td>
<td>2.706</td>
<td>3.885</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>1.957</td>
<td>3.107</td>
<td>3.565</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.06</td>
<td>0.07</td>
<td>0.133</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions due to problem behaviors</td>
<td>Unweighted mean</td>
<td>10.598</td>
<td>14.539</td>
<td>19.159</td>
<td>D &gt; B &gt; R</td>
<td>58.724***</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>11.017</td>
<td>15.055</td>
<td>20.428</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>14.307</td>
<td>16.231</td>
<td>19.767</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>0.509</td>
<td>0.37</td>
<td>0.676</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008 SASS</td>
<td>Resourced Group (R)</td>
<td>Balanced Group (B)</td>
<td>Demands Group (D)</td>
<td>Contrasts</td>
<td>F</td>
<td>Effect Size</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>-----------</td>
<td>------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Class size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweighted mean</td>
<td>20.194</td>
<td>20.308</td>
<td>20.237</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted mean</td>
<td>20.489</td>
<td>20.425</td>
<td>20.32</td>
<td>0.248</td>
<td>-0.027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust sd</td>
<td>6.371</td>
<td>6.656</td>
<td>6.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust se</td>
<td>0.282</td>
<td>0.208</td>
<td>0.334</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students with an IEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweighted mean</td>
<td>2.534</td>
<td>2.737</td>
<td>2.876</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted mean</td>
<td>2.58</td>
<td>2.78</td>
<td>2.68</td>
<td>0.935</td>
<td>0.047</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust sd</td>
<td>3.116</td>
<td>3.141</td>
<td>3.096</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust se</td>
<td>0.143</td>
<td>0.093</td>
<td>0.137</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEP students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweighted mean</td>
<td>1.213</td>
<td>1.939</td>
<td>2.912</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted mean</td>
<td>1.673</td>
<td>2.942</td>
<td>3.928</td>
<td>D &gt; B &gt; R</td>
<td>21.978***</td>
<td>0.467</td>
<td></td>
</tr>
<tr>
<td>Robust sd</td>
<td>3.682</td>
<td>5.242</td>
<td>5.864</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust se</td>
<td>0.186</td>
<td>0.215</td>
<td>0.323</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. * - p<.05, ** - p<.01, *** - p<.001.*
### Table 5.

#### Autonomy Scale Scores by Appraisal Group

<table>
<thead>
<tr>
<th>2000 SASS</th>
<th>Resourced Group (R)</th>
<th>Balanced Group (B)</th>
<th>Demands Group (D)</th>
<th>Demands vs. Resourced Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n=2,310$</td>
<td>$n=3,380$</td>
<td>$n=2,090$</td>
<td></td>
</tr>
<tr>
<td><strong>School Influence</strong></td>
<td>Unweighted mean</td>
<td>542.429</td>
<td>502.808</td>
<td>447.432</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>537.573</td>
<td>495.981</td>
<td>440.510</td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>86.309</td>
<td>87.818</td>
<td>94.769</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>2.029</td>
<td>1.491</td>
<td>3.023</td>
</tr>
<tr>
<td><strong>Classroom Control</strong></td>
<td>Unweighted mean</td>
<td>538.813</td>
<td>499.862</td>
<td>465.124</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>532.975</td>
<td>494.005</td>
<td>454.618</td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>101.561</td>
<td>92.679</td>
<td>86.990</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>2.723</td>
<td>1.877</td>
<td>2.296</td>
</tr>
<tr>
<td><strong>Total Autonomy</strong></td>
<td>Unweighted mean</td>
<td>544.076</td>
<td>502.058</td>
<td>450.300</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>539.164</td>
<td>495.763</td>
<td>441.069</td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>87.207</td>
<td>78.082</td>
<td>83.393</td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>2.177</td>
<td>1.623</td>
<td>2.495</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2008 SASS</th>
<th>(R)</th>
<th>(B)</th>
<th>(D)</th>
<th>Contrasts</th>
<th>$F$</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n=3,150$</td>
<td>$n=5,930$</td>
<td>$n=2,900$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Classroom Control</strong></td>
<td>Unweighted mean</td>
<td>533.377</td>
<td>500.476</td>
<td>469.020</td>
<td>D &gt; B &gt; R</td>
<td>469.020 ***</td>
</tr>
<tr>
<td></td>
<td>Weighted mean</td>
<td>527.209</td>
<td>493.016</td>
<td>459.627</td>
<td>D &gt; B &gt; R</td>
<td>469.020 ***</td>
</tr>
<tr>
<td></td>
<td>Robust sd</td>
<td>98.740</td>
<td>94.590</td>
<td>94.705</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robust se</td>
<td>3.517</td>
<td>2.510</td>
<td>3.774</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* * - $p<.05$, ** - $p<.01$, *** - $p<.001$. 
Appraisal Group Differences and Teachers’ Perceived Autonomy

As was noted above, items examining Classroom Control were available for both the 2000 and 2008 SASS (see Appendix A).

Noted in Table 5, Demands group teachers reported statistically significantly lower scores in the 2000 SASS on all three measures as compared to Resourced teachers: School Influence ($d = -1.073$), Classroom Control ($d = -.825$), and Total Autonomy ($d = -1.148$); further, the same pattern of difference was found for Classroom Control for the 2008 SASS ($d = -.762$).

Discussion

Two important patterns to the results of this study are worthy of note. First, the results were not appreciably different across the 2000 SASS and the 2008 SASS, suggesting that the pattern of results in this study have not changed appreciably during the intervening years. Grissom et al. (2014) also found no differences in job satisfaction reported by teachers in SASS surveys before and after NCLB. Second, this pattern of findings replicates previous research with the CARD using local samples of teachers; specifically teachers classified in the Demands group had lower levels of job satisfaction and were more likely to be planning to leave the profession (AUHTOR, 2012b, 2014a).

The findings were more equivocal with respect to Appraisal group classifications and classroom characteristics. While previous CARD research using local samples of teachers has indicated that teachers classified in the Demands group report students with problem behaviors and learning disabilities in greater frequency (AUHTOR, 2007a), in this study a consistent pattern of theoretically-predicted group differences was found only in the 2000 SASS. However, the 2008 SASS only contained items on class size and percentage of students with an IEP or LEP. Statistical significance across groups was only found for the LEP percentage. It is important to note that such associations, statistically significant or not, do not imply that students with special needs are the cause of teacher stress. Rather, these patterns, especially for the 2000 SASS, suggest that classroom characteristics are an important factor in teachers’ everyday experience of their work environment.

As noted in previous studies (Béteille & Loeb, 2009; Boyd, Lankford, Loeb, & Wyckoff, 2005; Hanushek & Rivkin, 2007), school context can have a significant effect on teachers’ professional trajectory and vocational concerns. Specifically, more recent research suggests that working conditions, rather than the student demographics, are better predictors of teacher attrition and mobility (Johnson, et al., 2012; Simon & Johnson, 2013). While not the primary focus of this study, findings from our analyses suggest that particularly challenging school environments frequently associated with high minority, high poverty schools might place teachers at risk for stress—thus potentially exacerbating teacher mobility and attrition.

Research question three extended previous research by examining classroom variables not investigated in previous research with the CARD. Again, we found that the Demands group differed in important ways from the other groups. The results provided in Table 5 support previous research examining teacher autonomy and its association with teacher welfare and stress (Jiang, 2005; Pearson & Moomaw, 2005). Hargreaves (1994) suggested that taking measures to increase the professionalism of teaching, particularly in teachers’ control over instructional decision-making, may reduce teacher pressure, stress, and the perception of the inadequacy of time, a suggestion supported in this study. Providing opportunities for teachers to take on leadership roles within the school is associated with improved commitment to the profession, perceived autonomy, and efficacy (Smylie & Denny, 2001; York-Barr & Duke, 2004). Specifically, fostering environments of distributed leadership that give teachers greater professional responsibilities and control over their workplace.
environments has the potential to improve workplace climate and alleviate teacher stress (Hulpia, Devos, & Rosseel, 2010; Spillane, 2012).

These results support evidence than has been found in previous research with the CARD – teachers classified in the Demands group have different perceptions of their professional environment and work under conditions substantially different from other teachers. The results suggest that if administrators, and society at large, is interested in retaining a higher proportion of their teachers, it can be important to address perceived imbalances in workloads for teachers. In other words, considering how teachers perceive their workplace climate can be a valuable asset for school- and district-level leaders interested in retention and curtailing mobility.

Instead of pursuing unilaterally “top-down” educational mandates that do not take into account how the aims align with the capabilities of teachers, policymakers should consider pursuing “bottom-up” approaches toward policy implementation (Cohen & Moffitt, 2010; Cohen, Moffitt, & Goldin, 2007). The importance of administrators and other support professionals developing strategies to professionally enfranchise teachers so that they may take part in decision-making processes is implied from our findings. For example, involving teachers in the process of assigning children to classrooms, giving them the freedom to make their own decisions regarding curriculum and instruction (Jiang, 2005) and including them in hiring decisions can offer teachers an enhanced sense of professionalism and autonomy; thus potentially reducing occupational stress.

Furthermore, the framework of understanding teachers’ perceptions suggested by transactional models of stress can guide administrators through a process of carefully evaluating the areas in which their teachers feel the need for more resources, do not feel that existing resources are helpful enough, and areas where teachers may not recognize or be fully utilizing existing resources. Similarly, these findings suggest that administrators make efforts to identify classroom characteristics that teachers are likely to perceive as most demanding and to those individual teachers who perceive an imbalance between resources and demands. Acknowledging which teachers are more at-risk for occupational stress can inform leadership on best to distribute resources among and within schools. Such bottom-up resourced-based incentives can contribute toward a stable professional climate and are potentially much more economical than wage-based policies, which have a mixed record in retaining teachers (Béteille & Loeb, 2009; Fowler, 2003).

The results of this study also suggest that a more granular understanding of elementary teachers’ perceptions of demands and resources in their classroom could help explain why some teachers are more vulnerable to stress even when working under similar occupational conditions. The education production function approach (Hanushek, 2008; Monk, 1988) has been valuable in identifying external workforce factors such as school and administrative climate that are linked to trends such as teacher dissatisfaction, burnout, and turnover (Ingersoll, 2012; Tickle et al., 2011; Zellars, Hoewart, & Perrewe’, 2004). External realities such as being in a lower performing school, lacking administrative support, and increased pressure related to student performance on standardized exams are clearly important to elementary teachers’ occupational well-being. However, our findings suggest that by looking at factors rooted in the perceived classroom experience of elementary teachers, we may be better able to understand the mismatch that some teachers experience and perhaps develop policies that address this imbalance.

The identification of elementary teachers experiencing high demand levels vis-à-vis their resources could be critical in an era in which turnover is high and demands are unlikely to abate. The overall pattern of results in this study suggested that teachers classified as at risk for stress were also those most likely to be experiencing vocational concerns. Rather than measuring teacher stress in terms of its global sequalea such as lowered student achievement, job satisfaction, burnout, or intention to leave the profession, the CARD provides actionable feedback to teachers, administrators, and policy makers regarding the specific classroom demands and resources that are
at the root of the subjective perception and experience of stress for individual teachers and groups of teachers within schools. Moreover, it can help account for why some teachers persevere in the face of high demands, a burgeoning issue in the research of early-career educators (cf. Robertson-Kraft & Duckworth, 2014).

Limitations and Future Directions

A number of cautions should be observed in interpreting the results of this study. First, the results are based on responses to survey self-reported data. Therefore, considerations regarding the potential for measurement error should be considered in the interpretation of our research findings. Second, this exploratory study aimed to replicate previous CARD research using similar analyses and variable. It was therefore beyond the scope of this research to include multi-level, multivariate models that contained teacher and school control variables. Future research could examine the interaction of variables such as vocational concerns, autonomy, and particularly classroom characteristics, since the latter were not clearly linked to teacher stress in the 2008 SASS. Additional research is also warranted to examine building-level variance in teacher stress to determine if teachers nested within schools’ with similar characteristics vary in their stress levels compared to teachers in other schools. Multi-level models that include building, district, and even state policy and climate variables that were not included in the present study may offer additional evidences for the antecedents to and possible supports to prevent teacher stress. This is particularly important given recent findings, which emphasize the importance of building-level conditions in predicting turnover and mobility. Furthermore, causality among the patterns in the data should not be inferred given the absence of experimental designs. This caution is particularly important with respect to the pattern of findings using the 2000 and 2008 SASS – while examination of teacher responses at these two time intervals reveals important information, causality about effects of policies such as No Child Left Behind should not be inferred.

These limitations suggest a number of avenues for future research. In addition to the Schools and Staffing Survey, the Teacher Follow-Up Survey and Beginning Teacher Longitudinal Study were conducted the following years with a subsample of respondents who both left and remained in the profession. Future research could utilize the classification system from this study to analyze whether teachers in the Demands group actually left the profession the following year or transferred schools.

References


Chang, M. L. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of


Appendix A

Autonomy Scale Items from SASS Surveys

SASS Items Comprising School Influence (no influence = 1; a great deal of influence = 5)
Setting performance standards for students in this school
Establishing curriculum
Determining the content of in-service professional development programs*
Evaluating teachers
Hiring new full-time teachers
Setting discipline policy
Deciding how the school budget will be spent

SASS Items Comprising Classroom Control (no control = 1, complete control = 5)
Selecting textbooks and other instructional materials
Selecting content, topics, and skills to be taught
Selecting teaching techniques
Evaluating and grading students
Disciplining students
Determining the amount of homework to be assigned

**Autonomy** = Classroom control + School influence (Note: only 2000 SASS)

Denotes 1999-2000 only
Appendix B

Demands and Resources Scale from the SASS and the CARD

**SASS Demands Scale**

*Demands (recoded strongly disagree 1 to strongly agree 4)*

- The level of student misbehavior in this school interferes with my teaching
- Routine duties and paperwork interfere with my job of teaching
- The amount of student tardiness and class cutting in this school interferes with my teaching

*Demands (serious problem 1 to not a problem 4)*

- Student tardiness
- Student absenteeism
- Teacher absenteeism
- Students cutting class
- Physical conflicts among students
- Robbery or theft
- Vandalism of school property
- Student pregnancy
- Student use of alcohol
- Student drug abuse
- Student possession of weapons
- Student disrespect for teachers
- Students dropping out
- Student apathy
- Lack of parental involvement
- Poverty
- Students come to school unprepared to learn
- Poor student health

2k denotes 1999/2000 only

**CARD Demands Scale**

*How Demanding Are the Following? (rated not demanding 1 to extremely demanding 5)*

- Number of children in the classroom
- Children with limited English skills
- Children from diverse cultural backgrounds
- Range of developmental levels
- Number of children performing below grade level
- Children with learning disabilities
- Children with physical disabilities
- Gifted and talented children
- Homeless or transient children
- Children who do not follow directions
- Children with problem behaviors
- Children who require more time and energy than most children
- Number of program/administrative disruptions to the daily schedule
CARD Demands Scale (Cont’d)
Amount of physical classroom space
Classroom environment conditions
Availability of instructional resources
Availability of instructional materials
Availability of instructional supplies
Availability of instructional technology
Instructional resources and materials that are outdated
Time and effort working with protégé teachers
Meetings you are required to attend
Time spent performing non-teaching related duties
Parent conferences and contacts
Formal testing and objective assessments
Portfolios, performance assessments, or teacher ratings of children's achievement
Grading student work
Preparing lessons
Setting up classroom for instructional activities
Preparing classroom materials
Externally imposed changes to the expectations for your job performance
Overall, how demanding is your classroom
Disruptive children & children with problem behaviors
Paperwork requirements
Children with poor attendance

SASS Resources Scale
Resources (recoded strongly disagree 1 to strongly agree 4)
The principal lets staff members know what is expected of them
The school administration's behavior toward the staff is supportive and encouraging
I am satisfied with my teaching salary
I receive a greater deal of support from parents for the work I do
Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff
My principal enforces school rules for student conduct and backs me up when I need it
The principal talks with me frequently about my instructional practices
Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes
Most of my colleagues share my beliefs and values about what the central mission of the school should be
The principal knows what kind of school he/she wants and has communicated it to the staff
There is a great deal of cooperative effort among the staff members
In this school, staff members are recognized for a job well done
I am given the support I need to teach students with special needs
I make a conscious effort to coordinate the content of my courses with that of other teachers
I plan with the library media specialist/librarian for the integration of library media services into my teaching

2k denotes 1999/2000 only
CARD Resources Scale
How helpful are the following resources? (rated very unhelpful 1 to very helpful 5)
Aides/Assistants
Parent volunteers in the classroom
Parent support of school learning activities
Parent support of learning activities at home
adult mentors from the community
Support personnel for children with physical disabilities
Support personnel for gift or talented children
Support personnel for children with limited English skills
Support personnel for children from diverse cultural backgrounds
Support personnel for children with problem behaviors
Support personnel for children performing below grade level
Support personnel for computers and instructional technology
Counselors or family services workers
Special area teachers
Mentor teachers
Staff development opportunities
Materials for children with learning disabilities
Materials for gift or talented children
Materials for children with limited English skills
Materials for children from diverse cultural backgrounds
Materials for children with problem behaviors
Materials for children performing below grade level
Instructional materials
Instructional supplies provided by your school or program
Overall, how would you rate the resources available to help you with the demands of your classroom?
Administrators at your school
Instructional resources provided by your school or program
Support personnel for children with learning disabilities
About the Authors

Richard G. Lambert
University of North Carolina at Charlotte
rglamber@uncc.edu
Dr. Richard Lambert is a Professor of Educational Research at the University of North Carolina at Charlotte. He specializes in applied statistics, teacher stress and coping, and assessment for young children.

Christopher McCarthy
University of Texas at Austin
cjmccarthy@austin.utexas.edu
Christopher J. McCarthy is a Professor in the Department of Educational Psychology at the University of Texas at Austin. He studies stress and coping, particularly in educational contexts.

Paul G. Fitchett
University of North Carolina at Charlotte
Paul.Fitchett@uncc.edu
Paul G. Fitchett is an Associate Professor in the Department of Middle, Secondary, and K12 Education at the University of North Carolina at Charlotte. He studies the intersections between teacher working conditions, student learning outcomes, and educational policy.

Sally Lineback
University of Texas at Austin
sallylineback@gmail.com
Sally Lineback is a doctoral student in Counseling Psychology at the University of Texas at Austin. She is a former teacher and currently studies teacher stress and coping, with a particular interest in gay and lesbian teachers’ experiences with stress.

Jenson Reiser
University of Texas at Austin
jenson.reiser@gmail.com
Jenson Reiser is a doctoral candidate in Counseling Psychology at the University of Texas at Austin. Her research interests include stress and coping in educational settings; specifically, the research and development of in-school interventions to help teachers reduce and manage stress.
Identification of Elementary Teachers’ Risk for Stress

Editor Gustavo E. Fischman (Arizona State University)
Associate Editors: Audrey Amrein-Beardsley (Arizona State University), Kevin Kinser (University of Albany)
Jeanne M. Powers (Arizona State University)

Jessica Allen University of Colorado, Boulder
Gary Anderson New York University
Michael W. Apple University of Wisconsin, Madison
Angela Arzubiaga Arizona State University
David C. Berliner Arizona State University
Robert Bickel Marshall University
Henry Braun Boston College
Eric Camburn University of Wisconsin, Madison
Wendy C. Chi Jefferson County Public Schools in Golden, Colorado
Casey Cobb University of Connecticut
Arnold Danzig California State University, San Jose
Antonia Darder Loyola Marymount University
Linda Darling-Hammond Stanford University
Chad d’Entremont Rennie Center for Education Research and Policy
John Diamond Harvard University
Tara Donahue McREL International
Sherman Dorn Arizona State University
Christopher Joseph Frey Bowling Green State University
Melissa Lynn Freeman Adams State College
Amy Garrett Dikkers University of North Carolina Wilmington
Gene V Glass Arizona State University
Ronald Glass University of California, Santa Cruz
Harvey Goldstein University of Bristol
Jacob P. K. Gross University of Louisville
Eric M. Haas WestEd
Kimberly Joy Howard University of Southern California
Aimee Howley Ohio University
Craig Howley Ohio University
Steve Klees University of Maryland
Jaekyung Lee SUNY Buffalo
Christopher Lubienski University of Illinois, Urbana-Champaign
Sarah Lubienski University of Illinois, Urbana-Champaign
Samuel R. Lucas University of California, Berkeley
Maria Martinez-Cosio University of Texas, Arlington
William Mathis University of Colorado, Boulder
Tristan McCowan Institute of Education, London
Michele S. Moses University of Colorado, Boulder
Julianne Moss Deakin University
Sharon Nichols University of Texas, San Antonio
Noga O’Connor University of Iowa
João Paraskveva University of Massachusetts, Dartmouth
Laurence Parker University of Utah
Susan L. Robertson Bristol University
John Rogers University of California, Los Angeles
A. G. Rud Washington State University
Felicia C. Sanders Institute of Education Sciences
Janelle Scott University of California, Berkeley
Kimberly Scott Arizona State University
Dorothy Shipps Baruch College/CUNY
Maria Teresa Tato Michigan State University
Larisa Warhol Arizona State University
Cally Waite Social Science Research Council
John Weathers University of Colorado, Colorado Springs
Kevin Welner University of Colorado, Boulder
Ed Wiley University of Colorado, Boulder
Terrence G. Wiley Center for Applied Linguistics
John Willinsky Stanford University
Kyo Yamashiro Los Angeles Education Research Institute
arquivos analíticos de políticas educativas
conselho editorial

Editor: **Gustavo E. Fischman** (Arizona State University)
Editores Associados: **Rosa Maria Bueno Fisher e Luis A. Gandin**
(Universidade Federal do Rio Grande do Sul)

**Dalila Andrade de Oliveira** Universidade Federal de Minas Gerais, Brasil
**Paulo Carrano** Universidade Federal Fluminense, Brasil
**Alicia Maria Catalano de Bonamino** Pontifícia Universidade Católica-Rio, Brasil
**Fabiana de Amorim Marcello** Universidade Luterana do Brasil, Canoas, Brasil
**Alexandre Fernandez Vaz** Universidade Federal de Santa Catarina, Brasil
**Gaudêncio Frigotto** Universidade do Estado do Rio de Janeiro, Brasil
**Alfredo M Gomes** Universidade Federal de Pernambuco, Brasil
**Petronilha Beatriz Gonçalves e Silva** Universidade Federal de São Carlos, Brasil
**Nadja Herman** Pontifícia Universidade Católica – Rio Grande do Sul, Brasil
**José Machado Pais** Instituto de Ciências Sociais da Universidade de Lisboa, Portugal
**Wenceslao Machado de Oliveira Jr.** Universidade Estadual de Campinas, Brasil
**Jefferson Mainardes** Universidade Estadual de Ponta Grossa, Brasil
**Luciano Mendes de Faria Filho** Universidade Federal de Minas Gerais, Brasil
**Lia Raquel Moreira Oliveira** Universidade do Minho, Portugal
**Belmira Oliveira Bueno** Universidade de São Paulo, Brasil
**António Teodoro** Universidade Lusófona, Portugal

**Pia L. Wong** California State University Sacramento, U.S.A
**Sandra Regina Sales** Universidade Federal Rural do Rio de Janeiro, Brasil
**Elba Siqueira Sá Barreto** Fundação Carlos Chagas, Brasil
**Manuela Terrasêca** Universidade do Porto, Portugal
**Robert Verhine** Universidade Federal da Bahia, Brasil
**Antônio A. S. Zuin** University of York