AN ABSTRACT OF THE THESIS OF

Adrienne J. L. Henry for the degree of Master of Science in Human Development and Family Studies presented on June 1, 2018

Title: Job Strain in Toddler Teachers: Associations with Classroom Quality

Abstract approved: ___________________________________________________

Bridget E. Hatfield

This study examined four occupational health risks that contribute to job strain, the experience of infectious disease, musculoskeletal strain, job dissatisfaction, and depressive symptoms, for toddler teachers as predictors of classroom quality. Both the physical and social settings of early care and education (ECE) are influential in shaping children’s early experiences, and it is the adults who shape this environment. Yet, quality improvement initiatives focus on improving teaching practices to augment child development and are not focused on the health and well-being of the ECE workforce as a way to support children. Research has identified several specific sources of occupational health risks that contribute to job strain for ECE teachers. Infectious diseases and musculoskeletal strain are related to job quality in other care-related professions (e.g., Gustafsson & Marklund, 2011). Within ECE, preschool teachers who experience mental and emotional job strain (Li Grining, Raver, Champion, Sardin, Metzger, & Jones, 2010) and/or depressive symptoms (e.g., Hamre & Pianta, 2004) also experience decreased work quality, as defined through lower classroom quality. Exploring ways in which toddler teachers’ health and well-being is associated with classroom quality is needed to better understand how teachers support children’s learning.
Forty-four toddler teachers working in center-based classrooms with children aged 15-36 months participated in this study. The quality of the classroom was observed using the Classroom Assessment Scoring System—Toddler (CLASS-T; La Paro Hamre, & Pianta, 2012). Teachers reported on their experience of infectious diseases, symptoms of musculoskeletal strain, job dissatisfaction, and depressive symptoms. I hypothesized that higher levels of toddler teacher physical and psychological job strain would be associated with classrooms scoring lower in teachers’ emotional and behavioral support for children, as well as their engaged support for learning within center-based toddler classrooms.

In general, toddler classrooms were observed to be of low-mid to mid-quality. Teachers reported experiencing a range of physical strain including an average of just over three job-related symptoms of musculoskeletal strain and 2.39 infectious diseases within the past 6-month period. Additionally, in alignment with past research (e.g., Whitaker et al., 2015), 23% of teachers in the current study reported clinical level depressive symptoms (16 or higher on the CES-D; Radloff, 1977). Regression models did not reveal a significant association between physical or psychological job strain and classroom quality. The full regression model for job dissatisfaction including teacher age predicted significant variance in one domain of classroom quality, engaged support for learning, however.
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Job Strain in Toddler Teachers: Associations with Classroom Quality

by
Adrienne J. L. Henry

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Master of Science thesis of Adrienne J. L. Henry presented on June 1, 2018.

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Major Professor, representing Human Development and Family Studies

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Head of the School of Social and Behavioral Health Sciences

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Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

_______________________________________________________________
Adrienne J. L. Henry, Author
ACKNOWLEDGEMENTS

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Job Strain in Toddler Teachers: Associations with Classroom Quality

Chapter 1. Introduction

A persuasive and growing body of research implicates quality early childhood care and education settings in academic, social, and cognitive development across the life course (National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 1999, 2005; Shonkoff & Phillips, 2000). In response, national concerns have fueled changes in policy regarding early care and education (ECE) that seek to address program quality in support of children’s kindergarten readiness. Recent federal support toward these reforms, such as the Child Care and Development Fund and Race to The Top, offer states opportunities to make significant changes to their child care systems, including specific funds for investment in quality improvement efforts. Arguably the most instrumental factor in the quality of early childhood programs is the ECE workforce, the adults who shape quality ECE environments for children’s learning and development (White & Howe, 1998). The ECE workforce is tasked to meet the rising expectations of their field through new standards of classroom quality (e.g., increased expectations for teacher-child interactions and engagement with families and community) and by increased training requirements, such as hours or degrees (National Center on Early Childhood Quality Assurance, 2017). Teachers’ experiences within the classroom and workplace, specifically their associated health and well-being, are thus apt to be important in determining what happens for children.

Early care and education classroom quality plays an important role in the development of cognitive and social competence for young children (Burchinal et al., 2000; NICHD, 2002). Specifically, high quality teacher-child interactions support optimal development in young children (Hatfield, Burchinal, Pianta, & Sideris, 2016; Howes & Smith, 1995; Mashburn et al.,
example, high-quality teacher-child interactions in early care and education settings support children’s health (Hatfield, Hestenes, Kintner-Duffy, & O’Brien, 2013) and school-readiness skills (Hatfield et al., 2016; Mashburn et al., 2008).

In the field of child care, environmental health and safety concerns, as well as recent quality improvement initiatives (e.g., quality rating improvement systems), have focused almost exclusively on the child. This focus implies that an environment that is child-friendly is automatically adult-friendly (Whitebook & Ginsburg, 1983). For example, toddler classrooms are frequently equipped only with child-sized furniture. Teachers squat on child-sized chairs throughout the day for activities (e.g., art projects, shared mealtimes), raising and lowering themselves from a height of 6-10 inches off the floor to address other job responsibilities that arise unpredictably. Additionally, psychological factors such as depression and chronic mental and emotional strain related to the limited opportunities for advancement and low morale frequently present in an ECE environment can also adversely impact teachers' well-being (Siegrist, 2008).

Early childhood educators encounter a variety of occupational health risks within their workplace environment which may affect their health and well-being, potentially contributing to a lower quality classroom environment for young children. The current study examines the associations of teachers’ physical strain (i.e., infectious diseases and musculoskeletal strain), and psychological strain (i.e., job dissatisfaction, teacher depressive symptoms) with domains of toddler classroom quality that are related to toddlers’ development (La Paro, Williamson, & Hatfield, 2014).
Chapter 2. Literature Review

Theoretical Perspective: Job Demands-Resources Model

The mechanisms by which occupational health risks may affect ECE teachers’ work quality are well articulated in the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The JD-R Model provides a pathway with which to understand how workers of every occupation can be supported to contribute to organizational quality within the two general categories of job demands and job resources (see Figure 1). Job demands refer to the dimensions of work that require sustained physical or psychological effort or skill (Demerouti et al., 2001). These include organizational, social, physical, or psychological aspects of work wherein sustained effort is associated with either psychological or physiological costs to the employee (Demerouti et al., 2001). For example, the repetitious, biomechanically stressful lifting postures inherent in many occupations, such as toddler teachers, can lead to musculoskeletal disorders, which is an aspect of job strain (Larsman & Hanse, 2009). Job resources include aspects of a job that reduce demands, stimulate personal growth and development, and help the employee function to meet work goals (Bakker & Demerouti, 2007). Job resources also include the support and feedback an employee receives in the context of work, such as strength-based annual job evaluations and supportive relationships between co-workers. Job resources have motivational potential, either by encouraging engagement and performance, or because they support workers in achieving their work goals. Job demands and resources do not directly affect organizational outcomes but instead affect job strain and motivation which are related to organization outcomes, such as work quality (Demerouti et al., 2001).

According to the JD-R model, both chronic job strain and motivation play a role in the well-being of a worker and in their ability to contribute to organizational outcomes. Job strain
results from an exhaustion of an employee’s mental and physical resources and is associated with decreased physical and psychological functioning (Demerouti et al., 2001). When job demands are excessive and the available resources are limited, employee energy is drained through the resulting job strain (Bakker & Demerouti, 2007).

Motivation toward work performance and high work engagement also contribute to organizational outcomes. For example, a motivated toddler teacher with high job resources might plan additional learning activities beyond what is contained within the curriculum she has been following. This may result in a higher quality learning environment for children. Motivation and strain work in concert with job demands and resources. For example, an occupation with high demands that also has ample resources can be motivating to an individual. However, if the weight of the job’s demands overtakes that of its available resources, the individual may become less motivated to make the same job contributions. Additionally, high job demands can contribute to strain for an employee, affecting their organizational outcome. Ultimately, job resources can offset job demands on an employee, and thus the risks related to job strain. Job-related strain carries potential mental, emotional, and physical implications for an employee, as well as impacting organizational outcomes (e.g., work quality; Demerouti et al., 2001).

This study examines one part of the JD-R model: the pathway between job strain and organization outcomes, which is represented by the bolded line in Figure 1. Strain is operationalized by ECE teachers’ self-reported experience of four types of strain: musculoskeletal strain, experience of infectious disease, depressive symptomology, and job dissatisfaction. Organizational outcomes are represented by two domain of classroom quality: emotional and behavioral support and engaged support for learning. In the context of the study, strain is defined through physical symptoms and psychological symptoms. Physical symptoms
include teachers’ report of experiencing infectious diseases (e.g., cold/flu, RSV) and job-related musculoskeletal strain (e.g., shoulder and back pain) within the past 6 months. Psychological symptoms of strain include teacher depressive symptoms and job dissatisfaction. ECE teachers experiencing more job strain may demonstrate lower classroom quality.

Research with preschool and toddler teachers offers some support for this association between job strain and organizational outcomes. Toddler teachers who are dissatisfied with their job are less likely to offer children higher levels of cognitive support, such as teacher-child interactions that were cognitively stimulating and encouraging of exploration (Thomason & La Paro, 2013). Further, teacher depressive symptoms affect components of preschool classroom quality, including teacher-child relationships (Hamre & Pianta, 2004; Whitaker, Dearth-Wesley, & Gooze, 2015). Yet the associations between physical strain (e.g., back aches) and classroom quality are less explored with ECE teachers. This study builds on previous findings with respect to teacher health and classroom quality in two important ways, it (a) examines teachers’ physical strain with a focus on musculoskeletal strain and infectious disease, in addition to psychological strain, and (b) seeks to understand these associations with a workforce, toddler teachers, that is largely absent from the literature.
ECE teachers’ job strain and classroom quality, adapted from JD-R Model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

**Job Strain and Classroom Quality**

The quality of the early childhood environment is based, in part, on the relationships and interactions between children and their teachers (Hamre, 2014; Howes, 2000; Williford, Maier, Downer, Pianta, & Howes, 2013). For preschool children, close, supportive relationships and engagement with responsive teachers is predictive of children’s health (Hatfield & Williford, 2017), as well as positive socioemotional and academic development (Howes, 2000; Williford et al., 2013). Further, research supports a strong connection between high-quality teacher-child interactions in preschool to positive developmental trajectories into kindergarten and beyond (Phillips et al., 2017). Toddler classroom quality, measured by effective teacher-child interactions in support of both engaged learning and emotional and behavioral support, shows a similar pattern. Toddlers whose teachers engage with them through warm, supportive interactions display higher levels of emotional, behavioral, and cognitive development than
toddler in less supportive environments (Bandel, Aikens, Vogel, Boller, & Murphy, 2014; La Paro et al., 2014).

Elements of the classroom environment experienced by the child, including the emotional climate, the teachers’ sensitivity and responsiveness, and the support teachers provide in guiding behavior, can optimize a child’s learning experiences (Brebner, Hammond, Schaumloffel, & Lind, 2015). Sensitive and responsive teachers have a reflective quality in their interactions with the children and offer individualized feedback to support their learning and development (Hamre, 2014). Teachers experiencing a high physical or psychological workload, without the buffer of job resources, may experience a scarcity of contemplative space from which to invest in reflection about their teaching practice. According to the JD-R model, chronically high and unmitigated job demands can lead to job strain for employees and, in turn, negatively impact organizational outcomes (Demerouti et al., 2001). Teachers who suffer from job strain may be less able to provide a high-quality classroom for the children in their care. Specifically, physical and psychological symptoms (e.g., musculoskeletal strain, depressive symptoms) may affect a teacher’s ability to offer effective teacher-child interactions. Thus, for teachers, the result of a high physical or psychological workload can contribute to the quality of their classroom (i.e., the quality of their interactions with children), as an organizational outcome.

Physical strain, including musculoskeletal strain and infectious disease, have been observed to play a role in work quality across many care-related occupations including healthcare. One example of the way in which infectious diseases impact work quality is related to the response of employees to their experience of illness. In other care-related occupations, employees frequently work while ill, which has been found to impact the quality of their work (Gustafsson & Marklund, 2011). Psychological strain, including job dissatisfaction and
depression, is linked to work quality in ECE and in related fields. For example, job satisfaction is positively associated with job performance (Judge, Thoresen, Bono, & Patton, 2001) and work engagement for salespersons, engineers, and nurses (e.g., Shimazu et al., 2008). Further, research into a wide range of occupations, including health care and primary and secondary education professionals, robustly implices employee psychological well-being with work quality (e.g., Arens & Morin, 2016; Hoglund, Klingle, & Hosan, 2015; Scheepers, Boerebach, Arah, Heineman, & Lombarts, 2015).

**Physical strain.** This section describes two aspects of physical health strain inherent in the ECE occupation (i.e., the experience of infectious disease, musculoskeletal strain), summarizing prior research on their potential importance to worker well-being and organizational outcomes.

**Infectious disease exposure.** Early childhood educators are regularly exposed to and experience a host of infectious diseases prevalent in ECE settings including influenza, meningitis, respiratory and gastrointestinal illnesses, chickenpox, conjunctivitis, cytomegalovirus, rubella, streptococcus, and hepatitis A and B (American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education, 2002; Bright & Calabro, 1999; Kendall, 1983; Joseph et al., 2006; Slack-Smith et al., 2006). Slack-Smith and colleagues (2005) found that 86% of ECE workers took sick leave for infectious diseases within the past year. One specific example, influenza, is associated with a significant workplace productivity loss for working adults ranging from 3.7-5.9 days per episode with physician diagnosis (Keech & Beardsworth, 2008; Van Wormer, King, Gajewski, McLean, & Belongia, 2017). Adults working with multiple children under the age of three are particularly at risk of contracting transmittable diseases due to the
nature of their multiple daily interactions with children in their care (McGrath, 2007). Interactions between teachers and young children are characterized by teachers’ frequent exposure to a child’s bodily fluids (e.g., via toilet training, feeding, wiping of the nose and face) as they guide young children in gaining self-care competence. This exposure may be of particular concern for this majority-women ECE workforce during childbearing years, when the experience of certain infectious diseases (e.g., cytomegalovirus, chickenpox, fifth disease) can potentially impact a developing fetus (Alex, 2011; McGrath, 2007; Pickering, 1990).

For ECE teachers, increased experience of infectious diseases may simply mean working while sick. Workers in care, welfare, and formal education sector professions have been found to report to work despite feeling that in their current state of health they should take a sick day (Aronsson, Gustafsson, & Dallner, 2000). Frequently this is the result of difficulty in finding their temporary replacement (Aronsson et al., 2000). Gustafsson and Marklund (2011) found that for working adults, working while sick predicted their future poor health, physical complaints, low mental well-being, and low quality of work. It is unclear, however, if increased experience of infectious disease is linked to quality of work for ECE teachers. Due to the financial vulnerability of the ECE workforce, multiple and frequently unpaid sick days (Ross Phillips, 2004), or opting to work while sick, may add to mental and emotional job demands, which are associated with classroom quality (Hale-Jinks et al., 2006; Thomason & La Paro, 2009).

**Musculoskeletal strain.** Working with young children is a physical job that requires frequent bending and lifting movements. In other care-related fields (e.g., health care), recurrent musculoskeletal strain can lead to injury and long-term complications, including interference with work-related tasks and productivity, missed work, reduced activity, sleep disturbances and depressive symptoms, and may require medical treatment (Buscemi, Chang, Liston, McAuley, &
Schabrun, 2017; Lindegård, Larsman, Hadzibajramovic, & Ahlborg, 2014). For ECE teachers, the most frequently performed tasks also tend to be the most physically stressful: lifting from the floor; bending and stooping; stacking and carrying cots, toys, and children (Koch et al., 2015; Owen, 1994). Lifting postures in a child care setting are often biomechanically stressful, with the average two-year-old weighing in the range of 26-28 pounds (Kuczmarski et al., 2002) and prone to make unpredictable movements during their physical interactions with care givers. For example, a two-year-old child weighing close to 30 pounds can quickly climb onto a table top and suddenly require assistance from his teacher to get safely down again. The resulting body postures for an early childhood teacher can exert large compressive and shearing forces against the lower lumbar vertebral discs (Owen, 1994).

As with infectious disease, associations between musculoskeletal strain symptoms and work quality are not well understood for ECE teachers. Frequent musculoskeletal pain in health care workers has been associated with both decreased work performance and reduced work ability (Lindegård et al., 2014). Psychological factors also play a role in the development of musculoskeletal symptoms (Bongers, Kremer, & ter Laak, 2002; Buscemi et al., 2017; Koch et al., 2015; Macfarlane et al., 2009). Psychological strain, discussed in more detail below, has been associated with neck and shoulder symptoms among ECE teachers (Larsman & Hanse, 2009).

**Psychological strain.** Psychological job strain, including job dissatisfaction and depressive symptoms, are important to consider for the ECE workforce given the negative associations with classroom quality (Li Grining et al., 2010; Whitaker et al., 2015). The following section describes psychological strain symptoms inherent in the ECE occupation (i.e., job dissatisfaction, depressive symptoms), and summarizes prior research on their potential importance to worker well-being and organizational outcomes.
Job dissatisfaction. Job satisfaction, a mental and emotional attitude toward work, relates to day-to-day perceptions of fulfillment from work activities (Aziri, 2011). For school-age teachers, job satisfaction is positively associated with the activities that occur within the context of their classrooms, such as working with children, and witnessing children’s learning progress (Cockburn & Haydn, 2003). Additionally, job dissatisfaction has been associated with burnout (Koustelios, 2001; Vercambre, Bros selin, Gilbert, Nerrière, & Kovess-Masféty, 2009). Burnout involves an overwhelming exhaustion, characterized by feelings of detachment, depersonalization, inefficacy, cognitive weariness, and lack of satisfaction or accomplishment from the job (Maslach & Jackson, 1981; Maslach, Jackson, & Leiter, 1997). For example, in female school teachers, dissatisfaction with certain aspects of teaching (e.g., time constraints, salary, resources) were linked with dimensions of burnout (Vercambre et al., 2009). Burnout can also have physical consequences and is related to musculoskeletal symptoms. In a study by Armon et al. (2010), a positive correlation was found over time among healthy employees in levels of burnout and their risk of developing musculoskeletal pain.

Job satisfaction is also linked to the quality of teacher-child interactions. Recent findings suggest that as toddler teachers’ level of job satisfaction increases, they are more likely to support opportunities for children's cognitive development and classroom exploration (Thomason & La Paro, 2009). Depression, another facet of psychological health, also demonstrates associations with work quality for the ECE workforce.

Depressive symptoms. The ECE workforce presents a vulnerable population of workers whose characteristics (e.g., predominantly women, low compensation and educational attainment) may predispose them to increased risks for psychological symptomology (Albert, 2015; Bracke, 1998; Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993; Wilhelm, Parker, &
Hadzi-Pavlovic, 1997). Specifically, women tend to be disproportionately affected by depressive symptoms and may be more likely to miss work due to mental health problems related to stress and depression (EU-OSHA, 2013). Further, the financial insecurities within the ECE occupation (46% of childcare worker families compared with 25% of the U.S. workforce participate in at least one public assistance programs) contribute to stress and depressive symptoms among adults (Whitebook, Phillips, & Howes, 2014).

Moreover, depressive symptoms play a critical role in physical health and work quality. In a study by Whitaker et al. (2015), clinically significant depressive symptoms were found in 24% of the sample of Head Start preschool teachers. This prevalence is problematic given that preschool teacher depression is associated with lower-quality teacher-interactions (Hamre & Pianta, 2004; Whitaker et al., 2015), and preschool teacher depression is positively associated with child behavioral problems (Jeon, Buettner, & Snyder, 2014). The ways in which the depressive symptoms of toddler teachers affect work quality is largely unknown, but is likely present and possibly of larger magnitude given that both professional support and compensation for toddler teachers is lower than that of preschool teachers (Whitebook et al., 2014).

**Aims and Hypothesis**

To provide high quality care for young children, ECE teachers must have all the necessary tools. This includes support for physical and mental health within their occupational environment, the classroom. Consideration for the occupational risks to which ECE teachers are exposed stands to address consequences that reach beyond teachers’ immediate health and safety concerns. The quality of the ECE environment teachers shape represents far-reaching life course implications for young children (NICHD Early Child Care Research Network, 1999, 2005; Shonkoff & Phillips, 2000). Support for occupational health and well-being includes
consideration for both the physical (e.g., support for musculoskeletal) and psychological environment of the workplace (e.g., job satisfaction). Toddler teachers experiencing less physical and psychological strain may, in turn, be positioned to contribute to a higher quality classroom environment for the young children in their care.

I hypothesized that toddler teachers who experience a higher incidence of physical and psychological strain will have classrooms lower in emotional and behavioral support and engaged support for learning. Specifically, teachers who experience more physical strain through higher incidents of infectious diseases or a higher prevalence of musculoskeletal strain symptoms will display lower classroom quality. Further, teachers who report higher levels of psychological strain via higher levels of job dissatisfaction and depressive symptoms, will display lower observed classroom quality.
Chapter 3. Materials and Methods

Participants

Child care centers were contacted at random from a list of licensed child care programs in five counties in the northwest provided by the State’s Department of Education. Programs who served children of the study’s target age (15-36 months) and who were in operation year-round were contacted. Seventy-two letters were mailed and/or emailed to the director of each center, and a follow up call was placed to schedule a meeting with the director and/or teachers if interested. The three most common reasons for programs who did not participate included no response (28%), unknown reasons (e.g., “no thanks”; 19%), and being “too busy” (15%). Recruitment meetings were held with 28 programs, during which teachers had the opportunity to ask questions; eligibility was confirmed (see below); and if eligible and interested in participation, written consent was obtained. Teachers were deemed eligible if they, (a) were over the age of 18, (b) taught in classrooms serving at least four children between the ages of 15-36 months, (c) worked 20 or more hours per week, (d) had been working at the child care center for at least 6 months, and (e) primarily spoke English with the children in their classroom. Selection of eligibility criteria reflected the study’s goal of identifying occupationally-based symptoms (e.g., hours worked).

The final sample for this study included 44 teachers within 28 child care centers. All of the participating teachers were women, with an average age of 38.5 years ($n = 42, SD = 14.4$ months). Teachers were diverse in education, years of experience, and race/ethnicity (see Table 1). Teachers reported a range of annual earnings at their current job and worked an average of 38.27 hours per week ($SD = 4.53$ hours). On average, teachers had been employed at their
current child care program a mean of 6.63 years ($SD = 8.9$ years). Teachers reported a mean of 26 hours of professional development training within the past year ($SD = 27.6$).

Table 1.

*Participant Descriptives*

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**Procedure**

Data were collected from teacher questionnaires and classroom observations. Teachers reported on demographics and completed surveys about their physical and mental health and well-being. Quality of teacher-child interactions was assessed over one morning ($n = 42$) or afternoon ($n = 2$) in the classroom through an observational measure. Participating teachers
received a $25 gift card to a regional grocery store chain upon completion of both survey and classroom observation.

**Measures**

Teachers reported on their physical strain and psychological strain via subscales selected from the full NIOSH Generic Job Stress Questionnaire, which is widely used in the field of occupational health (Hurrell & McLaney, 1988).

**Physical strain.**

*Infectious disease.* The NIOSH Generic Job Stress Questionnaire (Hurrell & McLaney, 1988) health conditions subscale includes items from the Cornell Medical Index Health Questionnaire (Brodman, Erdmann, Lorge, Wolff, & Broadbent, 1951). In this study, the scale was adapted to include twelve infectious diseases common to early childhood environments (i.e., Cold/flu Gastroenteritis, Chicken Pox, Fifth Disease, Respiratory Syncytial Virus, Head Lice, Conjunctivitis, Impetigo, Strep Throat, Hand Foot and Mouth Disease, Roseola, and Pinworms), in addition to four of the subscale’s existing health conditions (i.e., insomnia/sleep disturbances, diabetes, high/low blood pressure, and asthma). Teachers indicated yes (1) or no (0) for each infectious disease experienced within the past 6 months. A total score was created that reflects teacher experience of infectious diseases.

*Musculoskeletal strain.* Teachers reported their job-related experiences of musculoskeletal strain using an adapted Nordic Musculoskeletal Questionnaire (Kuorinka et al., 1987). Previous work indicates that the questionnaire demonstrates high test-retest reliability (Balogh et al., 2001; Palmer, Smith, & Kellingray, 1999) and construct validity (e.g., correlated with clinical histories; Dickinson et al., 1992). Teachers were asked to complete a binary checklist (0 = *no*, 1 = *yes*) identifying the physical location (e.g., shoulders, neck, lower back) of
job-related aches, pains, or discomforts within the past six months. A prevalence of painful regions was created, with higher percentages indicating a greater incidence of musculoskeletal symptoms. In line with previous use of the measure, symptom prevalence was determined for job-related experiences of musculoskeletal strain within the past six-month period (e.g., Maulik, Iqbal, De, & Chandra, 2014; Reed, Battistutta, Young, & Newman, 2014).

**Psychological strain.**

*Job dissatisfaction.* The NIOSH Generic Job Stress Questionnaire (Hurrell & McLaney, 1988) contains one item measuring job satisfaction: “All in all, how satisfied would you say you are with your job?” Respondents ranked their satisfaction on a four-point scale (1 = I am not at all satisfied, 4 = I am very satisfied). For the current study, the item was reverse-coded, so that a higher score indicates higher job dissatisfaction.

*Depressive symptoms.* Teachers ranked 20 items on the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) to indicate their depressive symptomology using a four-point Likert-type scale. The CES-D scores range from 0 (best possible) to 60 (worst), with items like “I felt depressed.” As recommended by Radloff (1977), a sum score was calculated so that higher scores reflect higher depressive symptomology. A score of 16 or higher is recommended as the cut-off point for depression (Weissman, Sholomskas, Pottinger, Prusoff, & Locke, 1977). The CES-D shows acceptable reliability (e.g., Hann, Winter, & Jacobsen, 1999; α = .85). In the current study, the CES-D displayed good internal consistency (α = .88).

*Classroom quality.* Classroom quality, specifically teacher-child interactions, was assessed with the Classroom Assessment Scoring System (CLASS-T; La Paro, Hamre, & Pianta, 2012). The CLASS-T has been shown to have construct validity and acceptable reliability in prior research (Bandel et al., 2014; La Paro et al., 2014). CLASS-T observers had a two-day
training by a certified CLASS-T trainer. Following the training, certified observers obtained a minimum of 80% agreement with five master coded videos before conducting observations in the field. On a pre-arranged observation day, a trained observer conducted five 30-minute cycles of observations and rated classroom-level teacher-child interactions. Toddler classroom quality was assessed on eight dimensions which are collapsed into two domains. The domain of Emotional and Behavioral Support (EBS) includes five dimensions: Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Student Perspectives, and Behavior Guidance. The domain of Engaged Support for Learning (ESL) is comprised of three dimensions: Facilitation of Learning and Development, Quality of Feedback, and Language Modeling. The scores for each of the eight dimensions were rated on a seven-point Likert-type scale after each 20-minute observation with higher rankings indicating higher quality teacher-child interactions (Low [1, 2], Mid [3, 4, 5], High [6, 7]). Two domain scores were calculated by first computing the average for each dimension across observation cycles and then calculating the average of the dimensions with each of the two domains (EBS and ESL), in line with previous work (Bandel et al., 2014; La Paro et al., 2014) and as recommended by the authors of the CLASS-T (La Paro et al., 2012). Reliability estimates in the current study sample for each of the domains were good (EBS, α = .88; ESL, α = .94). Sixteen percent of the classroom observations were double-coded. For the double coded classroom observations, after the observation was complete, the two coders reached consensus and consensus scores were utilized in analyses. Percent agreement between coders averaged 88%.

Analytic Plan

Analyses were conducted using SAS® Version 9.4 of the SAS System for Windows 10 (SAS Institute Inc., 2002-2014). First, frequencies and descriptive statistics (e.g., mean, standard
deviation) were performed for each of the four predictor variables (i.e., infectious disease incidence, musculoskeletal strain, job dissatisfaction, and depressive symptoms) and outcome variables (i.e., EBS and ESL). An inspection of descriptive statistics allowed for the identification of missing data on predictor variables, the presence of outliers or skewed data, and to test assumptions of normality. As expected, there were some missing data for predictor variables and covariates. Depressive symptom scores and age were missing for one teacher; two teachers did not report their job-related musculoskeletal strain symptoms; one teacher did not report her depressive symptoms; one teacher did not report her age; one teacher was missing an answer for job dissatisfaction; and one teacher failed to report her musculoskeletal strain, infectious disease experience, depressive symptoms, or job dissatisfaction. Survey questions may have been skipped by accident or intentional omission. There were no missing data for outcome variables. Overall, variables were normally distributed with acceptable skew and kurtosis. Job dissatisfaction displayed a positive skew (1.71), however further investigation revealed that most teachers (n = 40) rated job dissatisfaction as 1 (very satisfied) or 2, while the remaining two teachers rated a 3 and 4 (not at all satisfied), respectively.

To refine the selection of covariates for inclusion in hypothesis testing bivariate correlations revealed patterns of association (Table 3). The list of covariates was pared down based on significant correlations with one of the CLASS-T outcome variables to include teacher age. This covariate was included in all hypothesis testing models.
Chapter 4. Results

The quality of teacher-child interactions, as measured by the CLASS-T, indicated that on average, classrooms for toddlers were of low to mid quality (see Table 2). The majority of classrooms (86.4%) were in the mid-range (scoring a 3, 4, or 5), and 13.6% of classrooms were in the low range (rated a 1 or 2). There were no classrooms scoring in the high range (at or above a score of 6) for the EBS domain. For the ESL domain of the CLASS-T, the majority of classrooms (59%) were in the low-range (scored a 1 or 2). Forty-one percent of classrooms were in the mid-range (3, 4, or 5). There were no classrooms scoring in the high range (at or above a 6) for the domain of ESL.

Table 2. Descriptives for Job Strain and Classroom Quality

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Strain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious disease incidence</td>
<td>43</td>
<td>2.39</td>
<td>1.78</td>
<td>0 - 5.00</td>
</tr>
<tr>
<td>Musculoskeletal strain symptoms</td>
<td>42</td>
<td>3.07</td>
<td>2.72</td>
<td>0 – 9.00</td>
</tr>
<tr>
<td>Psychological Strain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job dissatisfaction</td>
<td>42</td>
<td>1.46</td>
<td>0.67</td>
<td>1.00 – 4.00</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>41</td>
<td>11.00</td>
<td>8.55</td>
<td>1.00 – 50.00</td>
</tr>
<tr>
<td>Classroom Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional and Behavioral Support</td>
<td>44</td>
<td>4.09</td>
<td>0.89</td>
<td>2.12 - 5.40</td>
</tr>
<tr>
<td>Engaged Support for Learning</td>
<td>44</td>
<td>2.90</td>
<td>1.11</td>
<td>1.33 - 5.87</td>
</tr>
</tbody>
</table>

Overall, teachers reported low levels of infectious disease and musculoskeletal strain (Table 2). The most common ailment teachers reported experiencing was cold/flu (72%), followed by insomnia or other sleep disruptions (57%) and gastroenteritis (52%). Regarding musculoskeletal strain, 68% of teachers reported at least one symptom of job-related musculoskeletal strain in the past six months. Teachers reported the lower back as the most
common physical location of their musculoskeletal symptom (64%), followed by the knees (41%), shoulders (41%), and upper back (34%).

Teachers were generally satisfied with their job (see Table 2). Sixty percent of teachers reported feeling “very satisfied” with their job. Thirty-five percent of teachers reported feeling “somewhat satisfied,” whereas only 2% reported that they were “not at all satisfied.” On average, teachers reported low levels of depressive symptoms, yet 23% of teachers displayed scores at or above 16, indicating a risk for clinical depression.

Bivariate correlations were examined between the six main variables and a key covariate (i.e., teacher age). The results indicated a significant correlation among teachers’ job dissatisfaction and ESL (see Table 3). No other job strain or classroom quality variables displayed a significant correlation, however. Teacher age was significantly associated with ESL and was included in the regression models as a covariate.
Table 3.  
Correlations of Major Study Variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Infectious disease</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Musculoskeletal strain</td>
<td>42</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Job dissatisfaction</td>
<td>42</td>
<td>0.19</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Depressive symptoms</td>
<td>41</td>
<td>0.27</td>
<td>0.10</td>
<td>0.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>EBS</td>
<td>44</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.26</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>ESL</td>
<td>44</td>
<td>-0.06</td>
<td>-0.13</td>
<td>-0.31*</td>
<td>-0.07</td>
<td>0.85**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Teacher age</td>
<td>43</td>
<td>-0.23</td>
<td>0.10</td>
<td>-0.12</td>
<td>-0.16</td>
<td>0.29</td>
<td>0.31*</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Teacher education level</td>
<td>44</td>
<td>-0.01</td>
<td>0.09</td>
<td>0.09</td>
<td>-0.39*</td>
<td>0.08</td>
<td>0.01</td>
<td>0.19</td>
</tr>
<tr>
<td>9.</td>
<td>Teacher years of experience</td>
<td>44</td>
<td>-0.22</td>
<td>-0.08</td>
<td>-0.17</td>
<td>-0.12</td>
<td>0.09</td>
<td>0.19</td>
<td>0.61**</td>
</tr>
</tbody>
</table>

*p < 0.05. **p < 0.001.
**Regression Models**

Multivariate multiple regression was conducted to predict classroom quality as defined by EBS and ESL. Specifically, eight regression models were executed to examine if teacher experience of infectious diseases, musculoskeletal strain, job dissatisfaction, and depressive symptoms would display lower observed classroom quality (i.e., EBS and ESL), after controlling for teacher age. Coefficients for the regression models are displayed in Table 4. Overall, teachers’ physical or psychological job strain did not significantly predict differences in classroom quality. The full regression model examining the association between job dissatisfaction and teachers’ ESL was significant and explained 17% of the variance (Table 4). Yet, within that model, the individual predictors of teacher job dissatisfaction and teacher age demonstrated trend-level significance ($p = .07$ and .08, respectively) with ESL.
Table 4.
Regression Models of Job Strain Predicting Classroom Quality

<table>
<thead>
<tr>
<th></th>
<th>Emotional and Behavioral Support</th>
<th>Engaged Support for Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$ (SE) $\beta$</td>
<td>$B$ (SE) $\beta$</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.18 (0.47)**</td>
<td>1.94 (0.59)**</td>
</tr>
<tr>
<td>Teacher Age</td>
<td>0.01 (0.00) 0.31</td>
<td>0.02 (0.01)* 0.31</td>
</tr>
<tr>
<td>Infectious Disease</td>
<td>0.05 (0.07) 0.10</td>
<td>0.02 (0.09) 0.03</td>
</tr>
<tr>
<td>($n = 44$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>2.09</td>
<td>2.11</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.43 (0.42)**</td>
<td>2.17 (0.52)**</td>
</tr>
<tr>
<td>Teacher Age</td>
<td>0.01 (0.01) 0.26</td>
<td>0.02 (0.01)* 0.32</td>
</tr>
<tr>
<td>Musculoskeletal Strain ($n = 42$)</td>
<td>-0.01 (0.05) -0.03</td>
<td>-0.07 (0.06) -0.17</td>
</tr>
<tr>
<td>$F$</td>
<td>1.38</td>
<td>2.64</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.87 (0.52)**</td>
<td>2.82 (0.64)**</td>
</tr>
<tr>
<td>Teacher Age</td>
<td>0.01 (0.00)$^t$ 0.26</td>
<td>0.02 (0.01)$^t$ 0.26</td>
</tr>
<tr>
<td>Job Dissatisfaction</td>
<td>-0.28 (0.20) -0.21</td>
<td>-0.45 (0.25)$^t$ -0.27</td>
</tr>
<tr>
<td>($n = 43$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>2.94</td>
<td>3.91*</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.32 (0.50)**</td>
<td>1.96 (0.62)**</td>
</tr>
<tr>
<td>Teacher Age</td>
<td>0.01 (0.01)$^t$ 0.28</td>
<td>0.02 (0.01)* 0.33</td>
</tr>
<tr>
<td>Depressive Symptoms</td>
<td>0.00 (0.01) 0.06</td>
<td>0.00 (0.02) 0.00</td>
</tr>
<tr>
<td>($n = 40$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>1.51</td>
<td>2.33</td>
</tr>
</tbody>
</table>

$^t = p < .10$. $^* = p < .05$. $^{**} = p < .01$. $^{***} = p < .001$. 

Chapter 5. Discussion

This study was guided by one main research question: Are toddler teachers’ symptoms of physical and psychological strain associated with classroom quality? The current study is informed by one pathway (i.e., job strain to organizational outcome) within the Job Demands-Resources (JD-R) model (Demerouti et al., 2001; see Figure 1). The JD-R Model focuses on the interplay between job demands, job resources, motivation, and job strain in organizational quality (e.g., work quality). Job demands (i.e., dimensions of work requiring sustained physical or psychological effort or skill; Demerouti et al., 2001) can result in job strain when employee effort comes at a physical or psychological cost that chronically outweighs available job resources. Job resources include aspects of a job that reduce demands, and help the employee function to meet work goals (Bakker & Demerouti, 2007). Job resources can also have motivational potential by encouraging the employee's engagement and performance toward meeting their job goals (Demerouti, 2011). The current study explores four specific aspects of toddler teachers’ physical and psychological job strain and the associations with the quality of teacher-child interactions. I hypothesized that toddler teachers who experience more physical strain through higher incidents of infectious diseases or musculoskeletal strain symptoms, or report higher levels of psychological strain via higher job dissatisfaction and depressive symptoms, would display lower observed classroom quality.

The results of the current study suggest that toddler teachers experience a range of physical and psychological strain symptoms. Additionally, classroom quality, as measured by the CLASS-T (La Paro et al., 2012) indicated a mid-low to mid-range of classroom quality on average, comparable to findings from previous studies (e.g., Cassidy et al., 2017; Castle et al., 2016). Teachers’ age was found to be significantly related to the quality of cognitive stimulation
and enriching play-based learning provided to children in their care within the present study.

Contrary to the hypothesis, multivariate multiple regression models predicting classroom quality from job strain did not reveal significant associations. The full regression model examining the association between job dissatisfaction and teachers’ ESL was significant, explaining 17% of the variance, although within that model, the individual predictors of teacher job dissatisfaction and teacher age only demonstrated trend-level significance ($p = .07$ and .08, respectively) with ESL.

**Toddler Teacher Physical Strain**

Previous research has identified that ECE employees are at an increased risk for musculoskeletal disorders (e.g., Larsman & Hanse; McGrath, 2007) and exposure to infectious diseases (e.g., Bright & Calabro, 1999; Slack-Smith et al., 2006) due to factors inherent in their work. The current study examined the extent of these occupational strains in a small, cross-sectional sample of toddler teachers. Descriptive findings echoed those of previous studies, outlining a diverse experience of job-related musculoskeletal strain symptoms, as well as teacher-reported infectious diseases.

**Infectious disease.** Previous research describes increased risk factors for infectious disease exposure for the ECE workforce (e.g., Joseph et al., 2006; Slack-Smith et al., 2006), however few studies to date have examined the association of this exposure to organizational outcomes. The current study explored how toddler teachers’ experiences of suffering from among the most common communicable diseases of early childhood (e.g., cold/flu, RSV, gastrointestinal illness) are associated with the interactions they had with the children in their care. Though teachers reported experiencing 2.39 infectious diseases on average, this was not significantly related to the quality of their interactions with children.
Despite reporting suffering from over two infectious diseases in the past 6-months, teachers took an average of just one sick day within the same 6-month period. This tendency to not take a sick day when ill is supported by Gratz and Claffey (1996) who found that fully 87% of ECE teachers reported working while sick. In other fields, adults who worked while sick were more likely to demonstrate future poor health and low quality of work (Gustafsson & Marklund, 2011) so greater alignment between infectious disease symptoms and work quality on the day of symptoms may be needed to demonstrate an association between infectious disease and work quality. Further, the lack of association between teachers’ infectious disease and classroom quality in the current study may reflect unique characteristics of the sample related to the relative longevity of this sample of teachers in their current position ($M = 6.63$ years). First, their longevity may generate more resilience to illnesses common to their work environment over their tenure. Second, these toddler teachers may have more job resources or high-levels of motivation, both of which may mitigate the effects of job strain on work quality (Demerouti et al., 2001). Third, teachers prone to more debilitating effects of such common illnesses may opt not remain in the field. For these reasons and others, teacher-child interactions may not have been adversely impacted by reported teacher illness in this study.

**Musculoskeletal strain.** The impact of musculoskeletal strain on occupational outcomes for the ECE workforce is not well understood to date. In other occupations (e.g., health care), frequent musculoskeletal pain is associated with poorer work performance (e.g., Lindegård et al., 2014). The current study asked teachers to report on their symptoms of job-related strain for areas of the body particularly impacted by the frequent and biomechanically stressful movements encountered in ECE work settings (i.e., upper back, lower back, joints) over the last 6 months. Results indicated that teachers in the study sample experienced an average of three
musculoskeletal strain symptoms ($SD = 2.7$) within the last 6-month period, however this was not significantly related to the quality of their interactions with children.

It is possible that these teachers may have access to job resources to manage their musculoskeletal strain (e.g., changing tables equipped with child-stairs, teachers partitioning physically effortful tasks to their assistant teachers, conducting their classrooms with less need to lift and carry children). This strategy follows the JD-R model (Demerouti et al., 2001) pathway of using available job resources in order to address job demands, thus moderating the potential for job strain, such as musculoskeletal disorder, and its associations with organizational outcomes. Further, as with infectious disease, the real-time alignment of musculoskeletal pain symptoms with classroom quality may be of interest. For example, had teachers been asked to report their musculoskeletal strain symptoms on the day of the classroom observation, a different picture may have emerged of the effects of this strain on their interactions with children.

**Toddler Teacher Psychological Strain**

Previous research has outlined associations between psychological strain and classroom quality for ECE teachers (e.g., Corr et al., 2015; Hamre & Pianta, 2004; Jeon et al., 2014; Li Grining et al., 2010; Whitaker et al., 2015). The current study focused on two aspects of psychological strain which, according to the JD-R model, may influence work quality: job dissatisfaction and teacher depressive symptoms. Findings indicate no significant association between depressive symptoms and classroom quality for the current study sample, however a trend-level significant association was identified between teachers’ job dissatisfaction and ESL.

**Depressive symptoms.** Teachers in the current study exhibited a different trend from previous research which identifies links between teacher depressive symptoms and classroom quality (e.g., Jeon et al., 2014; Hamre & Pianta, 2004; Whitaker et al., 2015). Although 23% of
teachers in the sample reported a CES-D score at or above the criteria for clinical depression (compared with a national rate of 12.3% for women of the mean study participant age; Pratt & Brody, 2014), depressive symptoms did not significantly predict classroom quality. Much of the previous research linking depression and teacher-child interaction quality (e.g., Hamre & Pianta, 2004; Whitaker, 2015) has examined the relation between depression and teacher-child interactions among preschool teachers, less is known about toddler teachers.

It is possible that the adult dynamic within the toddler classroom plays a role in moderating the effects of teacher depression on teacher-child interactions. Hamre and Pianta (2004) found that teacher depression was more closely associated with caregivers' negative behavior for teachers who spent less time among other adults (e.g., assistant teacher). This situation is less common in center-based toddler classrooms, due to financially-motivated class sizes and associated state-prescribed teacher-child ratios. Future research should examine the difference in adult dynamics between toddler and preschool classroom settings and links to depressive symptoms. Previous studies have also had the power to include multiple teacher covariates (e.g., food insufficiency, SNAP, difficulty affording housing/utility bills; Whitaker et al., 2015), compared to the current study. Additionally, study participants were younger in Hamre and Pianta (2004; $M = 30.5$ years) than the current study ($M = 38.5$ years).

Of note, the teachers in this study also shared their high levels of personal satisfaction with their work, which may increase motivation and thus work quality in line with the JD-R model (Demerouti et al., 2001). In an open-ended question on the teacher survey, teachers expressed, “Working with toddlers is such a rewarding job and it gives me a special feeling. I am very proud of my job every day” and “I love two-year-olds! They grow and accomplish so much. It is exciting to see how happy they are when they are potty-trained, discover Christmas and their
birthdays.” This high level of satisfaction may moderate the effects of depression for some toddler teachers and should be explored in future work. In a similar vein, Whitaker et al. (2015) found that although preschool teachers’ report of high economic hardships, which are common in the ECE workforce (Whitebook et al., 2014), were associated with higher workplace stress, they were not correlated with teacher-child relationship quality, suggesting that even in a high-demand situation (e.g., higher workplace stress) with low resources (e.g., financial), teachers’ motivation may play a role in achieving high-quality interactions with children in line with the full JD-R model.

**Job dissatisfaction.** Previous research suggests a negative link between teachers’ cognitive support for children’s learning and their degree of job dissatisfaction (Thomason & La Paro, 2013). Results from the current study add to this picture. The full regression model, which included job dissatisfaction and teacher age, predicted a significant amount of variance in ESL. Further, teachers reporting a higher degree of job dissatisfaction also exhibited trend-level, lower CLASS-T scores in ESL. Engaged support for learning focuses on ways that teachers offer formative feedback and scaffolding, exposure to language (e.g., open-ended questions), and facilitate exploration and problem solving (La Paro et al., 2012). For example, a classroom scoring high in ESL, indicates a teacher who is sensitive and responsive to children’s actions or comments, offering individualized feedback that ultimately extends children’s learning opportunities. A teacher who is dissatisfied with her job may find it challenging to persist in providing a high level of sensitive and individualized feedback to children supportive of their cognitive development. The result may be the loss of opportunities for children’s extended learning. For example, if a teacher does not notice that a toddler is unable to complete a six-piece
puzzle, she may provide a table activity involving 10-12 piece puzzles and fail to stay close by to assist the child in their learning of this new skill.

Overall, it is also important to consider the length of time teachers in this study reported being employed at their current program, an average of 6.63 years, in conflict with the national annual turnover rate of 25-40% for ECE teaching staff, indicating that at least one in four teachers leave their program, or the field of ECE, within twelve months (National Association for the Education of Young Children, 2004; National Association of Child Care Resource & Referral Agencies, n.d.; Whitebook et al., 2014). The employment longevity in this sample of toddler teachers is unique and may provide one explanation for some of the non-significant associations between job strain and classroom quality within the current study. The theoretical underpinning of the JD-R Model supports this explanation, suggesting that engaged workers rally and prioritize the available job resources because they are motivated to stay engaged in the achievement of their work goals and personal growth and development (Bakker, & Demerouti, 2014). It is possible that the toddler teachers in the current study have rallied and prioritized their job resources over the course of their many years with their current employment situation in order to achieve their work goals of higher quality classroom interactions (i.e., organizational outcome). Additionally, it is interesting to note that teachers in the current study reported a mean of 26 hours of professional development within the last year, considerably more than the average state’s requirement of 10-15 hours per year of continuing education and professional development for licensed, center-based child care programs (U.S. Department of Health and Human Services, Administration for Children and Families: National Center on Early Childhood Quality Assurance, n.d.), and may be further indicative of study teachers’ engagement and commitment to work goals.
Limitations and Future Directions

Although the current study used well-established measures to examine key variables related to toddler teacher job strain and classroom quality (e.g., CES-D, CLASS-T), it had several limitations. The small sample size limited the power of the current study to detect significant associations between musculoskeletal strain, experience of infectious disease, depressive symptoms, and job dissatisfaction with classroom quality. Questions remain around whether a larger sample size would have reflected findings from previous studies that supported an association between these predictor variables and classroom quality. The cross-sectional design of the study, and specifically the data collection timeframe, provided a snap-shot of the relevant study variables.

The data collection timeframe for the current study encompassed the summer and early fall months. It is possible that seasonal classroom characteristics including illness prevalence, child age and development, and classroom functioning, among other considerations, may have contributed to key findings. For example, classroom ratios during the summer months are often lower due to family vacation schedules, which tend to correspond to older siblings’ school breaks. In fact, teacher-child ratios in the current study averaged 1:3, which is lower than state child care licensing standards for center-based toddler care. Those standards vary widely across the nation, allowing between a 1:4 and a 1:9 ratio of adults to toddlers (U.S. Department of Health and Human Services, Administration for Children and Families: Office of Child Care, 2011). Previous research has consistently identified a positive association between lower teacher-child ratios and classroom quality in ECE (e.g., Brodin & Renblad, 2015; von Suchodoletz, Fäsche, Gunzenhauser, & Hamre, 2014).
Future research would do well to explore year-round data in order to rule out influences such as the aforementioned seasonal ratio fluctuations, as well as other cyclical influences, for example children’s social and cognitive development over the course of a given time period year. This may be of particular salience due to the rate of child development between the study’s target child age of 15-36 months. Additionally, all predictors were obtained though teacher self-report. Although an integral part of social science research, self-report data has well-established limitations (e.g., Spector, 1992).

Future work is also needed to gauge which workplace environmental attributes show the most promise in protecting teachers from musculoskeletal strain. These attributes may include the presence of adult-sized furniture, point-of-decision-prompt style reminders posted in key locations that offer tips for ergonomic child lifting techniques, as well as providing children themselves with developmentally sensitive options that promote self-reliance, such as diaper-changing tables that have built-in child steps for older infants and toddlers.

Finally, prior research has found associations between teachers’ depressive symptoms and negative behavior and less time spent amount other adults, such as an assistant teacher (Hamre & Pianta, 2004). This is an area particularly in need of further exploration for infant and toddler teachers. State child care licensing guidelines dictate substantial differences in teacher-child group and ratio sizes between preschool, and infant and toddler classrooms. The realities of working either alone or alongside another adult (i.e., class size and ratios) may be linked to teacher depression and negative teacher-child interactions. Further, there may be a point for infant and toddler teachers where smaller ratios may have a less positive influence on their psychological well-being and thus their interactions with children, when the majority of their work day is spent alone with children. Future research should examine the difference in adult
dynamics between infant/toddler and preschool classroom settings and links to psychological demands and job strain.
Chapter 6. Conclusion

The physical and psychological health and well-being of the ECE workforce, particularly toddler teachers, is a fundamental component of child care quality that has been largely unexplored. Early childhood educators, and particularly toddler teachers, are regularly exposed to a host of infectious diseases prevalent in early childhood settings (e.g., influenza, respiratory and gastrointestinal illnesses; American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education, 2002), as well as musculoskeletal strain from the often biomechanically stressful lifting postures inherent in toddler care (Bright & Calabro, 1999). Toddler teachers, a population of workers predisposed to increased risks for psychological symptomology (Albert, 2015; Bracke, 1998; Kessler et al., 1993), experiences of psychological job demand (e.g., job dissatisfaction) within the classroom work environment can further contribute to an imbalance of job demands and resources, ultimately impacting worker well-being (Koustelios, 2001; Vercambre et al., 2009) as well as organizational outcomes (e.g., classroom quality).

The current study contributes to an expanding field of knowledge about how aspects of toddler teachers’ physical and psychological job strain may be associated with the organizational outcomes impactful to the trajectory of toddlers in center-based child care. Specifically, the current study identified an emerging association between job dissatisfaction and teachers’ support for children’s learning. Attention to compensation, training, and support has been found to reduce teacher stress and job dissatisfaction for this important workforce (Barnett, 2003; Hale-Jinks et al., 2006). Additionally, job resources such as the presence of other adults within the toddler classroom setting (Hamre & Pianta, 2004) and motivation for the work are important to consider. This may indicate a need for future research and subsequent policy reform that
recognizes the protective factors of an adult co-worker relationship within the toddler classroom and the motivations for work, in addition to other factors such as longevity in the field or professional development hours.

The JD-R model’s pathways of interaction between job demands, job resources, employee motivation, and job strain, toward organizational outcomes, is clearly more complicated than the one pathway examined within the current study. Understanding the protective factors and resources that may be particularly supportive to toddler teachers within the larger ECE workforce is critical moving forward. Due to the nature of this work, and the significance of classroom quality for our youngest and most vulnerable population (Burchinal et al., 2000; NICHD, 2002), investments made to monitor and improve workplace quality promises to maximize any investment. By this same token, addressing the quality for children in ECE without attending to the health and well-being of their carers is a limiting proposition.
Bibliography


