1-1-2013

Depression Symptoms In Early Childhood Teachers: Do Personality, Social Support, And School Climate Play A Role?

Jessica Mclaughlin
Wayne State University,

DEPRESSION SYMPTOMS IN EARLY CHILDHOOD TEACHERS: DO PERSONALITY, SOCIAL SUPPORT, AND SCHOOL CLIMATE PLAY A ROLE?

by

JESSICA MCLAUGHLIN

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2013

MAJOR: PSYCHOLOGY

Approved by:

_____

Advisor Date

_____

_____

_____

DEDICATION

For my husband,

because I never would have finished without

his unwavering love, support, and patience.

Thank you, always in all ways.

ACKNOWLEDGEMENTS

I would like to acknowledge Dr. Ann Stacks, Dr. Chris Trentacosta, and Dr. Angela Tzelepis for being an incredible dissertation committee. I am thankful for their help and support during this process.

I would also like to thank my advisor, Dr. Rita Casey, for helping me complete my dissertation. This project would not exist without the long hours she dedicated to it. I appreciate her moral support, and her guidance on forming hypotheses, analyzing data, interpreting findings, and polishing my writing. I am deeply grateful for everything she has done.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In the United States, high depression symptoms have recently been found in 34% of grade school teachers (McLaughlin, 2010). This is consistent with high symptom rates measured more than 20 years ago, where 32% of New York City teachers had high depression symptoms (Schonfeld, 1990). Similar rates of high levels of depression symptoms have been observed internationally, with approximately 34.9% of Spanish district school teachers reporting high depression symptoms (Jurado, Gurpegui, Moreno, & Luna, 1998). These studies suggest that school teachers have higher rates of depression than the general population. Whereas these studies found that approximately one-third of teachers are high in symptoms of depression, the point prevalence rate for depression in the United States' general population is approximately 2% to 9% (American Psychiatric Association, 2000). The highest point prevalence rate in the general population is 9%, which is for women.

Despite evidence suggesting that more teachers show a high degree of depression symptoms than is the case for the general population, few studies have specifically investigated teachers' depression symptoms as a function of the age of the students who are being taught. Specifically, little attention has been given to *early childhood teachers*, which is defined by the National Association for the Education of Young Children as individuals who are teaching children in third grade or younger (National Association for the Education of Young Children, n.d.). Although one study has found that approximately 9% of nonfamilial caregivers are depressed, this study involved a mixed sample of caregivers who cared for only young children under the age

of 36 months in a wide variety of settings, including within the child's own home, in the caregiver's home, or in a center (Hamre & Pianta, 2004). Exploring depression in early childhood teachers is important because teachers who have more depression symptoms have poorer quality classrooms (La Paro et al., 2009). If teacher depression affects the quality of the classroom, this likely negatively affects students by hindering their educational opportunities. This is supported by studies on teacher stress, which show that Finnish kindergarteners have less motivation to learn when they are taught by teachers who report high levels of stress (Pakarinen et al., 2010). Similarly, all young children, whether in preschool or primary grades, are likely negatively affected when their teachers are depressed. However, before studies explore a possible link between teacher depression and negative child outcomes, it is first important to establish the rate of depression among early childhood teachers, and have a sense of what factors are related to teacher depression. This was the goal of the present study.

Although depression has not been widely studied in early childhood teachers, burnout has been explored in this population. *Burnout* is typically defined as a condition involving emotional exhaustion, depersonalization or distancing one's self emotionally from others, and decreased work functioning (Maslach & Jackson, 1984). It occurs in professions that involve continuous contact with others, such as nursing, teaching, and mental health services. Burnout is considered distinct from depression but the two constructs are related, with shared variance of approximately 20% among nurses (McKnight & Glass, 1995). Previous studies suggest that levels of burnout are high in early childhood teachers. Among female professionals working in childcare settings,

45% had moderate or high levels of emotional exhaustion (Evans, Bryant, Owens, & Koukos, 2004).

Given that there are high rates of burnout in early childhood teachers, combined with evidence that grade school teachers are high in symptoms of depression, it is very likely that early childhood teachers also have high levels of depression symptoms. However, it is also likely that depression in early childhood teachers differs from depression found in grade school teachers because their environments – such as the age of their students, the classroom activities, the amount of parent-teacher interactions, and the attention given to standardized-testing performance – differ greatly. For example, students are required to take state-mandated tests in grade school and teachers are pressured to have their students meet specific score criteria, whereas these expectations are not placed on teachers within childcare and preschool facilities (Smith & Kovacs, 2011; U.S. Department of Education, n.d.). Among Canadian and Dutch teachers, secondary school teachers had higher scores of burnout than elementary school teachers (Van Horn, Schaufeli, Greenglass, & Burke, 1997). Given that rates of burnout in teachers vary based on the age of the students that they teach, it is likely that depression also manifests itself differently by teaching level. This provides further evidence that depression should be studied in early childhood teachers, instead of assuming that findings among grade school teachers apply to early childhood teachers.

Because it is likely that early childhood teachers have high rates of depression, it is important to determine what factors differentiate between teachers with more versus fewer symptoms of depression. Variables associated with lower levels of depression

symptoms – whether characteristics of the teachers or their environment, or both – could have protected teachers from becoming depressed. Identifying potential protective factors, or factors that keep teachers from being depressed, is important because these findings will have implications for strategies that can be implemented in early childhood settings to combat depression. Social support, personality, and school climate are three areas that have been studied very little in teachers, but could serve as factors that protect early childhood teachers from developing depression symptoms.

Teacher Personality

Personality is well known for its relation to depression (Vearing & Mak, 2007; Chien, Ko, & Wu, 2007; Bagby, Joffe, Parker, Kalemba, & Harkness, 1995; Bienvenu et al., 2004; Goodwin & Friedman, 2006; Schmitz, Kugler, & Rollnik, 2003). Studies conducted within the United States have not looked at this relationship specifically in early childhood teachers. However, some researchers outside of the United States have found that grade school teachers' personality is related to depression (Jurado et al., 2005; Moreno-Abril et al., 2007). Unfortunately, these international studies on teachers do not apply the most widely validated framework for assessing personality, thus measurement issues must be considered.

The majority of personality research in the United States considers the five-factor model to be the strongest theory of personality because it is modern and universal across cultures (McCrae, Terracciano, et al., 2005). This model asserts that personality is comprised of five broad traits: *neuroticism, extroversion, agreeableness, conscientiousness,* and *openness*. These traits are typically defined as follows: *neuroticism* is defined as being moody, temperamental, and having difficulty relaxing;

extroversion is being talkative, energetic, and rarely withdrawn; *agreeableness* means being cooperative, warm, and kind; *conscientiousness* refers to being organized, efficient, and careful; and *openness* is being creative, imaginative, and intelligent (Saucier, 1994). These traits are biologically based tendencies that tend to remain stable across time and consistent across situations and thus predict behavior (McCrae et al., 2000; McCrae & Costa, 1999). Furthermore, an individual's thoughts, feelings, and behaviors are guided by these traits (McCrae & Costa, 1999).

This five-factor framework shows links between aspects of personality and symptoms of depression. Individuals who suffer from Major Depressive Disorder are likely to have personalities low in extroversion and conscientiousness, along with high neuroticism (Rosellini & Brown, 2011). Vearing and Mak (2007) discovered that high levels of neuroticism predicted depressive symptoms among the Australian employees that they studied. In addition, persons low in conscientiousness were also more apt to have depressive symptoms. Another study, conducted with Taiwanese college students, had similar results: four of the five factors – neuroticism, agreeableness, extraversion, and conscientiousness – predicted affective and cognitive depressive symptoms (Chien et al., 2007). The authors referred to this constellation of traits as *depressive personality*, defined as high neuroticism, with low conscientiousness, agreeableness, and extraversion. They observed that this relationship between personality and depressive symptoms remained stable across one year.

There is also evidence that this combination of personality characteristics persist even when depressed individuals no longer meet criteria for a Major Depressive Episode. For example, in a Toronto study of depressed individuals in outpatient

treatment, neuroticism decreased as participants became less depressed; however, their mean level of neuroticism was still one standard deviation above the general population after their depression remitted (Bagby et al., 1995). Although there has been only a limited amount of recent research on these issues in the United States, research consistently shows that high neuroticism and low conscientiousness are associated with high depressive symptoms (Bienvenu et al., 2004; Goodwin & Friedman, 2006; Schmitz et al., 2003).

Personality and Depression in Early Childhood Teachers

Depression and its relation to personality have not been studied in early childhood teachers. Studies outside the United States have linked personality to depressive symptoms in grade school teachers. Two projects in Spain discovered that depressive symptoms in grade school teachers were associated with lower self-directedness and higher harm avoidance and novelty seeking (Jurado et al., 2005; Moreno-Abril et al., 2007). Both studies used the Temperament and Character Inventory (TCI), which assesses seven purported dimensions of temperament and character.

These studies did not use the better validated five-factor model in their design; however, the TCI's seven dimensions of temperament and character do map onto the five-factor framework (De Fruyt, De Wiele, & Van Heeringen, 2000). De Fruyt and colleagues demonstrated that the five-factor model and the dimensions of the TCI are very similar. *Harm avoidance* is positively correlated with neuroticism and negatively related to extraversion. *Novelty seeking* is positively correlated with extraversion and negatively correlated with conscientiousness. Also, *self-directedness* is negatively correlated with neuroticism and positively correlated with conscientiousness. Given

these findings, in combination with the previous studies conducted in Spain, low neuroticism and high conscientiousness may protect teachers against depressive symptoms.

One recent study investigated the relationship between personality and depression in grade school teachers from the United States (McLaughlin, 2010). In these teachers, self-rated personalities that were high in openness and neuroticism were likely to be accompanied by more depression symptoms, compared to teachers who were less open and less neurotic. Those findings suggest that teachers who are depressed tend to be more creative, intelligent, imaginative, moody, and emotionally unstable than teachers who are low in depression symptoms. Based on this and other studies, personality was also expected to be important for early childhood teachers in this study, possibly protecting them from depression symptoms. Specifically, it was expected that early childhood teachers with lower levels of neuroticism and openness and higher levels of conscientiousness, agreeableness, and extroversion would have fewer depression symptoms compared to those teachers who showed an opposite pattern of personality characteristics.

Social Support

Many studies have observed that lower levels of perceived social support are related to higher depression symptoms (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Gladstone, Parker, Malhi, & Wilhelm, 2007; Swindle, Cronkite, & Moos, 1989). Two sources of social support that are considered particularly important in preventing or reducing the effects of depression are support from a close family member or friend, and support from a supervisor in the workplace. What is important about this support, it

should be noted, is that a person feels or perceives that they have this support, rather than the support being objectively measured by some unrelated, neutral source (Antonucci & Israel, 1986; McDowell & Serovich, 2007). Individuals who think they have more sources of social support, and who have a high quality relationship with a significant other, are more likely to remit from their depression than is the case for persons who do not feel they have social support (Cronkite, Moos, Twohey, Cohen, & Swindle, 1998). Similarly, other studies demonstrate the importance of supervisor support in the workplace, such that less perceived support from a supervisor is related to more depression symptoms (Dormann & Zapf, 1999).

Some research has looked at social support in grade school teachers, although not specifically focused on early childhood teachers. Among first year teachers, those who feel more social support from their family and friends have fewer depression symptoms later in the year; however, for these new teachers, social support from colleagues and supervisors is not related to depression (Schonfeld, 2001). In a recent study of grade school teachers, those who said they had higher levels of social support from their school administrators and colleagues had fewer depression symptoms compared to the teachers who perceived less social support (Veenstra, 2010). Among secondary school teachers in the Netherlands, those who felt a lack of social support from colleagues and their school principals reported lower self-efficacy and saw themselves as less capable of obtaining desired social support from colleagues and their school leader, and this, in turn, predicted burnout (Brouwers, Evers, & Tomic, 2001). Another study confirmed that supervisor social support is related to lower levels of burnout among teachers, and that burnout was increased one year later if the

individuals were stressed at work and lacked social support from family and friends (Greenglass, Fiksenbaum, & Burke, 1994). Among elementary school teachers in Israel, teachers who felt they were being undermined by their school principal had higher job tension (Westman & Etzion, 1999). Thus, in this project, similar relationships between depression and social support were expected in early childhood teachers, such that early childhood teachers would have fewer depression symptoms if they felt that they were being supported by their school administrator and by some significant person in their lives outside their work.

School Climate

Another factor that could influence early childhood teacher's depressive symptoms is *school climate*, which is defined as the "teachers' perceptions of their work environment" (Hoy & Tarter, 1997, p.6). Schools can have either an *open*, *closed*, *engaged*, or *disengaged* climate. An *open* climate has teachers and a principal who have straightforward and open behaviors with each other, by showing respect, trust, and cooperation. Teachers who are in an open climate typically know each other well. The opposite of the open climate is the *closed* climate, which consists of a rigid and authoritarian principal along with teachers who are apathetic. An *engaged* climate involves an inflexible principal but teachers who are supportive and respectful of each other despite the disrespect they perceive from their principal. The final type of climate is the *disengaged* climate, which is the opposite of the engaged climate. In this climate, the principal is respectful and supports teachers and their opinions but the teachers do not respect each other and remain apathetic towards their work. These four climates

tend to be enduring traits of an individual school's environment in much the same way that personality consists of enduring traits of an individual (1997).

The openness of a school climate is associated with many different outcomes: more open climates tend to be associated with more trust between the principal and faculty (Hoy, Smith, & Sweetland, 2002), greater teacher commitment (Hoy, Tarter, & Bliss, 1990), and more teacher empowerment, which is related to higher student academic achievement (Sweetland & Hoy, 2000). Perhaps a more open school is also linked with positive teacher mental health outcomes, such as fewer depressive symptoms, given that school openness is associated with many other positive outcomes. This was recently explored in a study of grade school teachers (McLaughlin, 2010). Teachers in this study had fewer depressive symptoms if they viewed other teachers' in the school and their principal as being open. Thus, teaching in a school that is closed, in other words teaching with uninvolved and unsupportive teachers along with a rigid and authoritarian principal, is likely to mean that a grade school teacher will have more symptoms of depression. School climate has not been studied in early childhood teachers, but we expected a similar relationship such that early childhood teachers would have fewer depression symptoms if they felt that their school climate was open. Although not all early childhood teachers have a principal, most will have some person as a designated administrator or director. It is logical that other teachers' openness and the openness of their school's or site's administrator would be important factors contributing to the relative presence of depression symptoms among the teaching staff.

Interactions Between Personality, Social Support, and School Climate

Although it is likely that personality, social support, and school climate are each independently related to depression symptoms in early childhood teachers, it is also possible that these variables interact in a unique way to impact depression. Although the interaction between school climate and personality has not been studied in early childhood teachers, one previous study indicates that teachers who had a personality high in openness also reported less openness between teachers in their schools (McLaughlin, 2010). This finding suggests that personality factors can moderate the relations between school climate and depression symptoms.

With respect to social support and personality, studies have found that individuals perceive themselves as receiving more social support when they have low levels of neuroticism (Bolger & Eckenrode, 1991; Finch & Graziano, 2001; Prenda & Lachman, 2001), and high levels of extroversion (Bowling, Beehr, & Swader, 2005; Finch & Graziano, 2001; Prenda & Lachman, 2001), agreeableness (Bowling et al., 2005; Finch & Graziano, 2001), and conscientiousness (Prenda & Lachman, 2001). Social support and personality could also interact to affect depression. Among individuals with chronic kidney disease, higher social support was related to decreasing depression symptoms over one year; however, this relationship between social support and depression was only found if the person had high personality agreeableness (Hoth, Christensen, Ehlers, Raichle, & Lawton, 2007).

Due to some evidence that social support and school climate vary as a function of personality factors, the possible moderating effect of teacher personality on symptoms of depression should be addressed. Currently, no study has specifically

looked at the interaction of personality and school climate among teachers of young children, to see how this interaction is related to depression. Furthermore, no study has investigated whether early childhood teachers' personality moderates the relations between their social support and depression symptoms. Because there are gaps in the existing literature concerning interactions among social support, depression, and personality, the present study explored these potential relationships.

Present Study

In summary, few studies have examined depression in early childhood teachers, with most studies that do exist focusing on caregivers of infants and very young children under the age of 36 months in quite varied settings. Several studies of grade school teachers within and outside of the United States demonstrate that depression is a significant concern among teachers of school children from primary through high school grades. The proposed study investigated the links among personality, social support, school climate, and symptoms of depression in early childhood teachers, focusing specifically on teachers of young children of the ages defined as being in "early childhood" (National Association for the Education of Young Children, n.d.). Teachers in this study were all located in the United States. Participating teachers completed an online survey that included measures of depression, personality, social support, and school climate.

Findings similar to those of previous studies conducted on grade school teachers were the basis for our predictions. We expected that high levels of depression symptoms would be found among early childhood teachers. Teachers with low levels of neuroticism and openness, and high levels of conscientiousness, agreeableness, and

extroversion were expected to have fewer depressive symptoms compared to teachers with the opposite pattern of high and low in their personality characteristics. Early childhood teachers who perceived that they had high levels of social support from their school administrator and from a significant person beyond their workplace were predicted to have fewer symptoms of depression compared to teachers who perceived their social support as being low. Finally, we expected that early childhood teachers who had a more open school climate would have fewer symptoms of depression than would be seen in teachers from less open school environments.

In addition, some exploratory questions about the interaction between personality, social support, and school climate were investigated. It was expected that the openness of a school's climate would have a greater impact on depression symptoms for early childhood teachers who had a more open personality, compared to teachers whose personality was less open. We also expected social support to have a greater effect on depression symptoms for teachers who were less neurotic, and higher in extroversion, agreeableness, and conscientiousness.

CHAPTER 2

METHOD

Participants

Initially, 159 early childhood teachers teaching in a third grade classroom or lower agreed to participate in this online study; however, only 97 teachers indicated that they were currently teaching and completed all measures. Thus, data from 97 early childhood teachers were used in this study. Participants were required to be currently teaching third grade or younger because the National Association for the Education of Young Children considers early education as teaching children who are 8 years old or younger (National Association for the Education of Young Children, n.d.). This also includes infants and toddlers.

Information about participant characteristics is presented in Table 1. Teachers from 21 states participated, with approximately 52% of the teachers from Ohio and 21% from Michigan. A wide range of ages were taught, with approximately 51% of teachers teaching childcare or preschool (i.e., children age 0 through age 4), and 58% teaching kindergarten through third grade. This suggests that approximately 7% taught both age groups. Approximately 97% of the sample was female. Participants' ages ranged from 22 to 62 years old (M = 42.77, SD = 10.24). Approximately 91% of participants identified themselves as Caucasian, 3% identified as Hispanic, and 2% identified as African Americans. Annual teaching salary ranged from approximately $8,000 to $ 80,000 (M = 41,158.22, SD = 15,758.20).

Completers versus non-completers. Sixty-two participants agreed to participate in the survey but could not be included in analyses because they indicated

that they were not currently teaching or they did not complete all measures. Among the 62 non-completers, 17 were not currently teaching and thus were not eligible to participate in the study. Another 5 participants were current teachers but did not answer any questions on the survey. Thus only 40 individuals were currently teachers, started answering items for the survey, but did not complete all measures.

A *t*-test was conducted to determine if early childhood teachers who completed the survey and teachers who did not complete the survey differed in depression symptoms. Fifteen participants did not complete the survey but completed the CES-D. Non-completers did not differ significantly in depression symptoms compared to participants who did complete the survey, $t(109) = -.54$, $p = .59$. This null finding suggests that reported depression symptoms did not play a role in whether participants completed the survey.

Instruments

Demographics. Participants were asked to provide general demographic information, including age, gender, ethnicity, highest level of education completed, and salary.

Occupational information. Early childhood teachers were asked many questions about their occupation, such as the state and district that they taught in, the size of the school, the type of school, the age of students that they taught, and number of years teaching.

Depression. The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure early childhood teachers' depression symptoms (Radloff, 1977; see Appendix B for a copy of the instrument; Table 2 is an overview of the instruments,

including the CES-D). This 20-item measure includes statements about feelings or behaviors related to depression, such as “I felt sad” and “My sleep was restless.” Participants were asked how often each thought or behavior has occurred within the past week of their lives, and rated each item on a 4-point scale, ranging from “rarely or none of the time” to “most or all of the time.” Positive items were reversed scored and scores were added to obtain a number from 0 to 60, with higher scores indicating the presence of more symptoms. A cut-off score of 16 or higher is typically used as indicative of significant levels of depression symptoms (Radloff, 1977). The CES-D has demonstrated good validity and reliability coefficient *alphas* of .80 or above (Radloff, 1977). In a study of grade school teachers, the CES-D had an *alpha* of .92 (McLaughlin, 2010). For the present study, the CES-D had an *alpha* of .92 (refer to Table 3).

Personality. Saucier’s (1994) Big Five Mini-Markers was used to measure personality (refer to Appendix B for a copy of the instrument). This is a 40-item measure of neuroticism, extraversion, openness, agreeableness, and conscientiousness. Participants were presented with positive and negative adjectives for each trait, such as “moody” and “relaxed” (neuroticism), “talkative” and “shy” (extraversion), “intellectual” and “uncreative” (openness), “sympathetic” and “cold” (agreeableness), and “organized” and “careless” (conscientiousness). Participants determined how well each adjective describes them and then rated each item on a 9-point scale, ranging from “extremely inaccurate” to “extremely accurate.” Items were averaged to get a rating of each of the five traits for each individual, after reverse-scoring the negative adjectives. This measure has shown good internal consistency reliabilities of .69 or higher (Saucier, 1994). With grade school teachers, this measure had an *alpha* of .74 or higher for each

of the five scales (McLaughlin, 2010). It has also demonstrated good validity (Dwight, Cummings, & Glenar, 1998). For the present study, each scale had an *alpha* of .70 or higher, with the exception of the openness scale, which had an *alpha* of .66 (refer to Table 3).

Social Support. The Social Provisions Scale was used to measure social support (Cutrona & Russell, 1987; refer to Appendix B for a copy of the instrument). A 12-item version of this measure was used that includes statements about social support, such as "Can you depend on this individual to help you if you really need it?" Participants determined how well each statement described the support provider they were rating using a 3-point scale, ranging from "no" to "yes." The directions and items were altered slightly so that participants rated social support of their school administrator and a significant relationship of their choice. This format was used previously in a study of grade school teachers (Veenstra, 2010). With grade school teachers, the Social Provisions Scale had an *alpha* of .83 or higher. It has also shown high validity (Cutrona & Russell, 1987). In the present study, both social support scales had an *alpha* of .77 or higher (refer to Table 3).

School climate. The Organizational Climate Description Questionnaire for Elementary Schools (OCDQ-RE) was used to measure school climate (Hoy & Tarter, 1997; refer to Appendix B for a copy of the instrument). This 42-item measure asks teachers to determine whether each statement rarely occurs, sometimes occurs, often occurs, or very frequently occurs in their school. These 42 items provide a school climate profile on 6 dimensions, which include *supportive principal behavior* (e.g., "The principal uses constructive criticism"), *directive principal behavior* (e.g., "The principal

monitors everything teachers do"), *restrictive principal behavior* (e.g., "Teachers have too many committee requirements"), *collegial teacher behavior* (e.g., "Teachers are proud of their school"), *intimate teacher behavior* (e.g., "Teachers know the family background of other faculty members"), and *disengaged teacher behavior* (e.g., "Faculty meetings are useless"). Some questions were reworded to better reflect the environment of early childhood teachers. Specifically, the word "faculty" was replaced with the word "staff," and the word "principal" was replaced with the word "school administrator." Because of this, the principal scales are now referred to as *school administrator* scales.

The three school administrator dimensions were measured and then combined to obtain a single index of perceived *administrator openness*, whereas the three teacher dimensions were measured and combined to obtain a single score representing perceived *other teachers' openness*. Specifically, administrator openness is related to higher scores on supportive administrator behavior, and lower scores on directive administrator behavior and restrictive administrator behavior. Other teachers' openness is related to higher scores on collegial teacher behavior and intimate teacher behavior, along with lower scores on disengaged teacher behavior. Although participants' ratings of openness are often combined with ratings of teachers from the same school for this instrument, teachers' ratings were not combined with other teachers' ratings to protect participants' identity and also to investigate openness as perceived by each individual teacher. This method is highly reliable with each of the six dimensions having an *alpha* of .85 or higher for a sample of grade school teachers (McLaughlin, 2010). These dimensions have also demonstrated high reliability in other studies, with coefficient

alphas ranging from .75 to .95, and have good validity (Hoy, Tarter, & Kottkamp, 1991). In the present study, the *alpha* for both scales was .86 (refer to Table 3).

Procedure

Early childhood teachers participated in this study between June 2011 and June 2013. Participants were recruited through an announcement that was posted in the e-newsletter for the National Association for the Education of Young Children. The announcement included a brief explanation of the study along with a link to the survey that was posted on SurveyMonkey.com, a website that hosts online surveys. Early childhood teachers were also able to participate in the study by obtaining the online link from another teacher or individual who knew about the study. Also, some teachers were invited to participate through publicly available email lists online at educational facilities. We had no direct contact with potential participants.

After going to the web link, participants were directed to a consent page that provided an explanation of the study and the potential risks and benefits to participation. After giving online consent, the survey asked potential participants if they were currently teaching. If they were not currently teaching, they were thanked for their time and directed out of the study, ending their responses to the survey. If they indicated that they were currently teaching, they were first asked to complete demographic and occupational information. They were then asked to complete several more measures, including the social support, personality, school environment, and depression questionnaires. Each web page displayed included 10 to 40 questions. The survey took less than 30 minutes to complete. Then participants were thanked for their time and provided information about mental health resources and stress reduction tips.

Participants were also given the option to enter a drawing to win 1 of 10 $25 gift cards to Target or Staples. If participants wished to participate in the drawing, they were directed to a separate survey so that their identifying information could not be directly linked to their survey answers. This separate survey asked them to provide their name and email address so they could be contacted if they won a gift card. Winners were chosen randomly and then contacted via the email address provided. These participants were given the option to pick up the gift card or to send their address to the researcher so that the gift card could be mailed to them. Identifying information, including names, email addresses, and home addresses, were not linked to survey responses.

Hypotheses

The following hypotheses were examined in this study:

Hypothesis 1. Higher rates of depression exist among early childhood teachers than is typically observed in the general population.

Justification. Previous studies have suggested that approximately 32% to 35% of grade school teachers have high depression symptoms (Jurado et al., 1998; McLaughlin, 2010; Schonfeld, 1990). Furthermore, evidence suggests that early childhood teachers have high levels of burnout, which is related to depression (Evans et al., 2004). Although depression scores are not precisely equivalent to having a diagnosis of depression, these percentages are much higher than the point prevalence rate of depression found in the general population, which is approximately 2% to 9% in the United States (American Psychiatric Association, 2000).

Hypothesis 2. Early childhood teachers with lower levels of neuroticism and openness and higher levels of conscientiousness, agreeableness, and extroversion will have fewer depressive symptoms than teachers who have higher levels of neuroticism and openness or lower levels of conscientiousness, agreeableness, and extroversion.

Justification. Previous studies have found similar relationships between these personality variables and depression in individuals who are not early childhood teachers (Bienvenu et al., 2004; Chien et al., 2007; Goodwin & Friedman, 2006; McLaughlin, 2010; Schmitz et al., 2003; Vearing & Mak, 2007).

Hypothesis 3. Early childhood teachers who have higher levels of perceived social support from their school administrator and from a significant relationship outside of the workplace will have fewer depression symptoms.

Justification. High levels of perceived social support are related to fewer depression symptoms in individuals who are not early childhood teachers (Clara et al., 2003; Gladstone et al., 2007, Swindle et al., 1989). Specifically, fewer depression symptoms are related to support from a significant relationship outside of the workplace (Cronkite et al., 1998) and from a supervisor such as the school administrator (Dormann & Zapf, 1999; Veenstra, 2010).

Hypothesis 4. Early childhood teachers from more open school climates have fewer depressive symptoms than teachers from less open school climates.

Justification. Open school climates are associated with many positive outcomes, including more trust between the principal and faculty (Hoy et al., 2002), greater teacher commitment (Hoy et al., 1990), and more teacher empowerment (Sweetland & Hoy, 2000). Furthermore, a recent study of grade school teachers found that a less open school is related to teachers having more symptoms of depression (McLaughlin, 2010).

Exploratory Hypothesis 1. Personality openness moderates the relationship between school climate and depression symptoms such that the relationship between school openness and depression symptoms is stronger for early childhood teachers who have higher scores of personality openness.

Justification. A recent study has found that grade school teachers high on personality openness are more likely to perceive their school as being less open compared to teachers low on personality openness (McLaughlin, 2010).

Exploratory Hypothesis 2. Personality moderates the relationship between social support and depression symptoms such that social support has a stronger effect on depression symptoms for early childhood teachers who have a low level of neuroticism, and a high level of extroversion, agreeableness, and conscientiousness.

Justification. Greater levels of social support is related to low levels of neuroticism, and high levels of extroversion, agreeableness, and conscientiousness in individuals who are not teachers (Bowling et al., 2005; Prenda & Lachman, 2001). Furthermore, one study has shown that

social support was related to fewer depression symptoms in chronic kidney disease patients who had high levels of agreeableness, but not in patients low on agreeableness (Hoth et al., 2007).

To investigate these hypotheses, power was calculated using G*Power 3.0 (Faul, Erdfelder, Lang, & Buchner, 2007). Calculations were based on an alpha of 0.05, a medium effect size (0.30), and a sample size of 97, resulting in an overall power result of 0.92.

CHAPTER 3

RESULTS

Preliminary Analyses

Each variable was examined for how it was distributed and whether data were missing. Because a small amount of data was missing at random, a regression approach was used to replace these missing values with a substitute. Two variables had skewed distributions and were transformed before use in further analyses. Specifically, skew of the CES-D was corrected by using a square root transformation. Also, the Social Provisions Scale for a Significant Relationship was skewed and had kurtosis; therefore a logarithmic transformation was applied.

Several demographic variables were analyzed to see if they were significantly related to the depression scores of the teachers (see Table 4). Marital status, number of years teaching, school type (district vs. preschool vs. other), and whether they worked in Michigan (vs. elsewhere) were not significantly related to depression symptoms and were excluded from further analyses. Gender and ethnicity were not analyzed because there was not enough variance in either of these variables to examine their relations to depression; thus, they were also dropped from further analyses. Teachers' age, salary, education, level taught, and whether they worked in the state of Ohio (vs. elsewhere) were significantly related to depression symptoms. Specifically, teachers who were younger or who had higher salaries had higher CES-D scores, $r(95) = -.20$, $p = .05$ and $r(95) = .23$, $p = .02$, respectively. Based on a point-biserial correlation, teaching in the state of Ohio (vs. elsewhere) was related to higher CES-D scores, $r_{pb}(96) = .27$, $p < .01$.

From this point forward, working in the state of Ohio was referred to as *location* when used as a concomitant variable.

In addition, teachers who were more educated had higher CES-D scores, $r_{pb}(96) = .20$, $p = .05$. It should be noted that education levels were comprised of a "high" education group, which included those who had obtained a Master's degree, and a "low" education group consisting of the teachers whose highest degree was a high school diploma, or an Associate's degree being combined with those teachers who had a Bachelor's degree. This categorization allowed for greater statistical power, as only 11% of the sample reported their highest educational attainment being a high school diploma or Associate's degree.

Level taught was difficult to categorize because it was possible for teachers to teach multiple ages. For instance, a teacher could teach both preschoolers and first graders. When teachers of childcare through preschool-aged children (ages 0 through 4) were compared to teachers of primary grades (kindergarten through first grade), these categories of level taught were highly correlated with each other, $r_{pb}(96) = -.81$, $p < .001$, suggesting that using both categories as concomitant variables would be redundant. Therefore, only childcare through preschool was investigated as a potential concomitant variable and was referred to as *level taught* for future analyses. Level taught was related to depression scores, $r_{pb}(96) = -.24$, $p = .02$. Teaching children who are in preschool or childcare was related to having fewer depression symptoms.

Because these five demographic variables – age, salary, education, location, and level taught – were significantly related to depression scores, each of these five variables were included as concomitant predictors of depression in analyses of the

central hypotheses of the study. Also, correlations were examined between each concomitant predictor and the main predictors of the current study – personality, social support, and school climate – to determine whether any interaction terms should be calculated.

To determine whether there were likely to be important interactions among predictors in the analysis of personality and depression symptoms, correlations were calculated between the five concomitant predictors and the five personality factors. Education was positively correlated with Neuroticism such that a higher level of education was related to higher scores of Neuroticism, $r(97) = .24$, $p = .02$. Age was negatively correlated with Neuroticism, $r(96) = -.20$, $p = .05$. The five demographic variables were not related to Agreeableness, Conscientiousness, Extroversion, or Openness. Therefore, interaction terms were calculated between Neuroticism and Education, and between Neuroticism and Age, and these interactions were used in further analyses investigating the link between depression and personality.

For social support, correlations were calculated to determine whether the five concomitant variables were related to either Administrator Social Support or Significant Relationship Social Support. Salary was correlated with Administrator Social Support such that perceived social support from an administrator decreased as salary increased, $r(96) = -.21$, $p = .04$. No other demographic variables were significantly related to perceived social support from a close relationship or administrator. The interaction between Salary and Administrator Social Support was used in subsequent analyses of social support and depression.

Correlations among the five demographic variables and Administrator Openness and Other Teachers' Openness were examined for school climate. None of the five demographic variables were correlated with Other Teachers' Openness. Level Taught was related to increased scores of Administrator's Openness, $r_{pb}(97) = .32$, $p = .001$. Salary was negatively correlated with Administrator's Openness, $r(97) = -.28$, $p = .01$. Based on these findings, an interaction term between Administrator's Openness and Level Taught was calculated, and an interaction term between Administrator's Openness and Salary was determined. Both interaction terms were included in future analyses of school climate and depression.

Correlations between the personality and school climate variables were also examined to determine if any variables should be combined with more than 20% variance in common (refer to Table 5). Agreeableness and Neuroticism were highly correlated, with 25% variance in common, $r(97) = -.50$, $p < .001$. In addition, Administrator's Openness and Other Teacher's Openness were correlated with 22% variance in common, $r(97) = .47$, $p < .001$. Because of this, interactions were calculated for each pair of significantly correlated variables and used in subsequent analyses. No other personality or school climate variables were significantly correlated with more than 20% of variance in common and therefore no other variables were combined.

Depression Symptom Rates

Based on the CES-D cut-off score of 16 or above defined as being high in depression symptoms, 32% of the early childhood teachers in this study were high in depression symptoms. This appears to be much higher than the 9% point prevalence rate of depression in the general population within the United States, although the

participants were not formally diagnosed as being depressed, as this is beyond the function of the CES-D. Nevertheless, a *chi*-square comparison of the point prevalence percent and the obtained percent of teachers high in depression symptoms in this project, suggests a significant difference between this study compared to the general population, $\chi^2(1, N = 96) = 63.59$, $p < .001$. These results support the hypothesis that early childhood teachers have significantly higher rates of depression than what is usually found in the United States.

As mentioned previously, five demographic characteristics were related to teachers' depression symptoms, including their age, salary, education, level taught, and location. To further investigate the relations of these variables to CES-D scores, a series of analyses of variance (ANOVAs) were conducted (see Table 4 for descriptive statistics).

Early childhood teachers were divided into low and high groups using median splits of their age and salary in order to conduct ANOVAs of group differences. Younger teachers had higher CES-D scores compared to teachers within the older age group, $F(1, 93) = 6.30$, $p = .01$. Teachers in the high salary category reported more depression symptoms compared to teachers in the low salary group, $F(1, 93) = 4.25$, $p = .04$. For teacher's highest level of education attained, participants with a higher level of education had higher depression scores than teachers in the lower education group, $F(1, 94) = 3.83$, $p = .05$. Thus, early childhood teachers with a Master's degree reported more depression symptoms than teachers who had a Bachelor's degree or lower. Teachers who taught in the state of Ohio had more depression symptoms compared to teachers who taught in other states, $F(1, 94) = 7.45$, $p = .01$. For Level Taught, an

ANOVA revealed that teaching childcare through preschool was related to lower depression scores compared to teachers not teaching this age group, $F(1, 94) = 5.82$, $p = .02$. A second ANOVA of Level Taught showed that teaching primary grades was related to higher depression scores, $F(1, 94) = 5.19$, $p = .03$.

Although Salary and CES-D scores were positively correlated, a follow-up analysis was conducted to determine whether a third variable could be responsible for this significant correlation. Specifically, grade school teachers typically have higher salaries compared to childcare and preschool teachers, and thus Level Taught may be influencing this relationship. To investigate this, the data were split based on Level Taught. For teachers of kindergarten through third grade, Salary and CES-D scores were not significantly related, $r(54) = .13$, $p = .35$. Among childcare and preschool teachers, the relation between Salary and CES-D scores was also not significant, $r(41) = .19$, $p = .22$. These findings suggest that the relationship between Salary and depression symptoms can be accounted for by Level Taught.

Overall, these results indicate that early childhood teachers reported high rates of depression symptoms, more than is suggested by the rates of depression in the general population. Furthermore, these teachers were likely to report more depression symptoms if they were older, were more educated, taught in the state of Ohio, or were teaching in primary grades. They were less likely to be depressed if they were teaching children in a childcare or preschool facility.

Personality Traits

To examine the relationship between teachers' depression and personality, several hierarchical multiple regressions were calculated with their CES-D scores and

personality scores on the Big Five Mini-Markers scale. For each multiple regression, the five concomitant variables were entered into a first step. These included Age, Salary, Education, Location, and Level Taught. Then four of the personality factors were entered into a second step and each personality factor of interest in succession was entered into a final step, to identify the unique prediction of each personality variable to depression symptoms. For example, to determine the unique contribution of Conscientiousness to depression symptoms, the first step entered the concomitant variables, the second step entered Agreeableness, Extroversion, Neuroticism, and Openness scores, and the final step included Conscientiousness.

When the predictive roles of Neuroticism and Agreeableness were considered, an interaction of the two variables was also included in analyses, because these two variables were significantly related, having over 20% of their variance in common. Similarly, when Neuroticism was analyzed, the interactions of Age and Education Level with Neuroticism were included in the regression, because Neuroticism scores were significantly correlated with both of these concomitant variables, as mentioned previously. It was expected that higher scores in Agreeableness, Conscientiousness, and Extroversion, and lower scores on Neuroticism and Openness would predict lower CES-D scores.

The regression results for personality are presented in Table 6. The variables in these analyses accounted for a significant amount of variance in depression symptoms, $R^2 = .49$, $F(13, 80) = 5.93$, $p < .001$. Overall, the concomitant variables accounted for 15% of the variance in depression symptoms, $R^2 = .15$, $F(5, 88) = 3.03$, $p = .01$. The second step of the regression, which included the interaction of Neuroticism with Age

and Education, accounted for approximately 8% more of the variance than the concomitant variables alone, ΔR^2 = .08, $\Delta F(2, 86) = 4.17$, p = .02. The third step included the interaction between Neuroticism and Agreeableness and accounted for 4% more of the variance in depression symptoms than the previous steps, ΔR^2= .04, $\Delta F(1, 85) = 3.99$, p = .05. The personality traits accounted for approximately 23% more of the variance in depression symptoms than the concomitant variables or interactions, ΔR^2= .23, $\Delta F(5, 80) = 7.33$, $p < .001$. Upon further examination, only two of the five traits were significant, Extroversion and Neuroticism. Thus, another hierarchical multiple regression was calculated that included an interaction of the two significant variables (refer to Table 7).

The regression accounted for a significant amount of variance in depression symptoms, R^2 = .51, $F(14, 79) = 5.92$, $p < .001$. After accounting for the variance in the concomitant variables, interaction terms, and other three personality factors, the inclusion of Extroversion and Neuroticism in the fifth step of the regression accounted for 11% of the variance, ΔR^2 = .11, $\Delta F(2, 80) = 8.29$, p = .001. The interaction between Extroversion and Neuroticism, which was included in the last step of the regression, did not account for significantly more of the variance, ΔR^2 = .02, $\Delta F(1, 79) = 3.46$, p = .07.

Two follow-up hierarchical regressions were calculated with Neuroticism and then Extroversion entered alone on the last step to determine how each trait uniquely contributed to the variance in depression symptoms. The unique contribution of Neuroticism to the variance in depression symptoms was 4%, ΔR^2 = .04, $\Delta F(1, 79) = 6.86$, p = .01. The unique contribution of Extroversion to the variance in depression symptoms was also 4%, ΔR^2 = .04, $\Delta F(1, 79) = 6.61$, p = .01. These findings are

consistent with the hypothesis that lower ratings of Neuroticism and higher ratings of Extroversion would be related to fewer depression symptoms. Contrary to our predictions, Agreeableness, Conscientiousness, and Openness were not significantly related to depression symptoms.

Because the interactions of Age and Education with Neuroticism explained significantly more of the variance in step two of the regression than the concomitant variables alone, another hierarchical multiple regression was conducted to determine the unique contribution of these interaction terms to the variance in depression scores. This regression was identical to the previous regression with the exception that the interaction between Age and Neuroticism, and between Education and Neuroticism were moved to the last step of the regression.

The results of this regression demonstrated that the interactions of Age and Education with Neuroticism explained approximately 1% more of the variance in depression symptoms than the concomitant variables, main effect variables of personality, and interaction of Extroversion and Neuroticism, $R^2 = .51$, $F(14, 79) = 5.92$, $p < .001$. However, the interactions (ΔR^2) did not add significantly to the variance in depression explained by the main effects of personality. Since the change in explained variance was non-significant, these interactions were not investigated further.

Social Support

The relation between Social Support and CES-D depression scores was investigated by calculating a hierarchical multiple regression, using scores from the Social Provisions Scale obtained with reference to Administrator's Social Support and support that teachers had from a Significant Relationship. The first step of the

hierarchical multiple regression included the five concomitant variables mentioned previously. The second step added in the interaction between Salary and Administrator Social Support, as these two variables were significantly correlated. In the third step of the regression, Administrator's Social Support and Significant Relationship Social Support were entered. It was expected that lower CES-D scores from teachers would be predicted by their having higher Administrator's Social Support and Significant Relationship Social Support.

The regression results for social support are presented in Table 8. The regression accounted for a significant amount of variance in depression symptoms, R^2 = .39, $F(8, 85) = 6.73$, $p < .001$. The first step of the regression included only the concomitant predictors, exactly as described in the section above. The second step of this series of regression analyses, which included the interaction between Salary and Administrator Social Support, did not account for significantly more variance compared to the concomitant variables alone, $\Delta R^2 < .01$, $\Delta F(1, 87) = 0.43$, $p = .51$. The third step of the regression included both sources of social support, Administrator and Significant Relationship. Taken together, these significantly predicted depression symptoms and accounted for approximately 24% more of the variance than the concomitant predictors alone, $\Delta R^2 = .24$, $\Delta F(2, 85) = 16.43$, $p < .001$.

Two follow-up hierarchical regressions were calculated with each type of social support entered alone on the last step. The unique contribution of Administrator's Social Support to the variance in depression symptoms was 23%, $\Delta R^2 = .23$, $\Delta F(1, 85) = 6.73$, $p < .001$. The unique contribution of Significant Relationship Social Support to the variance in depression symptoms was less than 1%, $\Delta R^2 < .01$, $F\Delta$ (1, 85) = 0.50, p =

.48. These findings suggest that teachers who perceive more social support from their school administrator have fewer depression symptoms, as hypothesized. Receiving social support from a significant relationship, however, is not reflected in fewer depression symptoms, as had been expected.

School Openness

The relationship between School Openness and CES-D scores was examined by calculating a hierarchical multiple regression using teacher's CES-D scores and scores of Administrator's Openness and Other Teachers' Openness from the OCDQ-RE. Because Administrator's Openness and Other Teacher's Openness had over 20% of their variance in common, an interaction of the two variables was also included in analyses. Then a hierarchical multiple regression was conducted with the previously identified concomitant variables entered into the first step. As noted previously, Administrator's Openness was significantly correlated with Salary and Level Taught. Thus the interactions between Salary and Administrator's Openness, and Level Taught and Administrator's Openness, were included in the second step of the regression. Administrator's Openness and Other Teachers' Openness were entered in the third step and the interaction between these two school climate variables was included in the fourth step of the regression. It was expected that higher scores in Administrator's Openness and Other Teachers' Openness would predict lower CES-D scores. No predictions were made for the interaction.

The results of the regression are presented in Table 9. The regression accounted for a significant amount of variance in depression symptoms, $R^2 = .36$, $F(10, 83) = 4.65$, $p < .001$. Following the initial step with concomitant variables entered (as noted

previously), the second step of this series of regression analyses, which included the interaction of Administrator's Openness with Salary and also with Level Taught, explained 12% more of the variance in depression symptoms than the concomitant variables alone, $\Delta R^2 = .12$ $\Delta F(2, 86) = 7.19$, $p = .001$. The third step of the regression included Administrator's Openness and Other Teachers' Openness and explained approximately 9% more of the variance than the concomitant variables and interaction terms alone, $\Delta R^2 = .09$, $\Delta F(2, 84) = 5.91$, $p = .004$. The final step of the regression, which included the interaction of Administrator's Openness and Other Teachers' Openness, did not explain significantly more of the variance in depression symptoms, $\Delta R^2 < .01$, $\Delta F(1, 83) = 0.01$, $p = .97$.

Two follow-up hierarchical regressions were calculated with each school climate variable entered alone on the last step to determine the unique contribution of each variable in accounting for variance in depression symptoms. The unique contribution of Administrator's Openness to the variance in depression symptoms was 2%, $\Delta R^2 = .02$, $\Delta F(1, 83) = 2.79$, $p = .10$. The unique contribution of Other Teachers' Openness to the variance in depression symptoms was 4%, $\Delta R^2 = .04$, $\Delta F(1, 83) = 4.89$, $p = .03$. As predicted, early childhood teachers who reported higher Other Teachers' Openness had fewer depression symptoms. Contrary to expectations, there was no main effect between Administrator's Openness and depression symptoms.

Because the interactions of Salary and Level Taught with Administrator's Openness explained significantly more of the variance in step two of the previous regression than the concomitant variables alone, another hierarchical multiple regression was conducted to determine the unique contribution of these interactions to

the variance in depression scores. This regression was identical to the first regression with the exception that the interaction between Administrator's Openness and Salary, and between Administrator's Openness and Level Taught were moved to the last step of the regression.

The results of the regression showed that the interaction between Administrator's Openness and Salary and also with Level Taught explained 1% more of the variance than the concomitant and main effect variables of Administrator's Openness and Other Teachers' Openness, $R^2 = .36$, $F(10, 83) = 4.65$, $p < .001$. However, the interactions (ΔR^2) did not add significantly to the variance in depression explained by the main effects of school climate. Since the change in explained variance was non-significant, these interactions were not investigated further.

Moderation of Personality Openness on School Climate and Depression

Two three-step regressions were calculated to test for the moderating effect of personality openness on the relation between school climate and depression symptoms. For the first regression, the first step entered concomitant variables from previous analyses. The interactions of Administrator's Openness with Salary and also with Level Taught were entered into the second step of the regression. Then Administrator's Openness and Personality Openness were included in the third step. Finally, the interaction of Administrator's Openness and Personality Openness was entered at the third step. The second regression was identical except that Administrator's Openness was replaced with Other Teachers' Openness, and the interactions of Administrator's Openness with concomitant variables were removed. It was expected that the

relationship between school openness and depression symptoms would be stronger for early childhood teachers who have higher levels of personality openness.

The results of the regression involving Administrator's Openness are presented in Table 10. The regression accounted for a significant amount of variance in depression symptoms, R^2 = .35, F(10, 83) = 4.52, p < .001. The first step of the regression included only the concomitant variables, as mentioned previously. The second step of this series of regression analyses, which included the interaction of Administrator's Openness with Salary and Level Taught, accounted for 12% more of the variance than the concomitant variables alone, ΔR^2 = .12, ΔF(2, 86) = 7.19, p = .001. The third step included Administrator's Openness and Personality Openness. It accounted for 7% more of the variance in depression symptoms than the concomitant and interaction terms alone, ΔR^2 = .07, ΔF(2, 84) = 4.74, p = .01. The interaction between Administrator's Openness and Personality Openness in the fourth step of the regression did not explain significantly more of the variance, ΔR^2 = .01, ΔF(1, 83) = 1.23, p = .27. This null finding suggests that Personality Openness does not moderate the relationship between Administrator's Openness and CES-D scores.

The results of the regression investigating the moderating effect of Personality Openness between Other Teachers' Openness and depression symptoms are available in Table 11. This regression also accounted for a significant amount of variance in depression symptoms, R^2 = .32, F(8, 85) = 4.99, p < .001. Following the initial step with concomitant variables entered (as noted previously), the second step of the regression, which included Other Teachers' Openness and Personality Openness, explained 17% more of the variance in depression symptoms than the concomitant variables alone,

ΔR^2 = .17, $\Delta F(2, 86) = 10.89$, $p < .001$. For the third step of the regression, the interaction between Other Teachers' Openness and Personality Openness did not account for significantly more of the variance in depression symptoms, $\Delta R^2 < .01$, $\Delta F(1, 85) = 0.07$, $p = .80$, which shows that Personality Openness did not influence the relationship between Other Teachers' Openness and CES-D scores.

The results of these two hierarchical regressions do not support our exploratory hypothesis. Personality Openness did not moderate the relationship between school climate and depression symptoms in early childhood teachers.

Moderation of Personality on Social Support and Depression

Possible moderating effects of personality traits – agreeableness, conscientiousness, extroversion, and neuroticism – on the relation between social support and depression symptoms were examined using a series of hierarchical multiple regressions. For each of the four personality variables, two regressions were conducted. For example, the moderating effect of Conscientiousness on social support was examined by running two regressions. The first step entered concomitant variables, the second step entered Administrator Social Support and Conscientiousness, and the third step entered the interaction between Administrator Social Support and Conscientiousness. Then this same regression was conducted again but with Significant Relationship Social Support instead of Administrator Social Support. This process was then repeated for the other three personality traits. When Neuroticism was analyzed, the interactions of Neuroticism with Age and Education were included, as described previously. It was expected that social support would have a stronger effect on depression symptoms for early childhood teachers who had a low level of

neuroticism, and a high level of extroversion, agreeableness, and conscientiousness. Significant findings are described below, whereas null findings are not reported.

None of the personality traits moderated the relationship between Administrator Social Support and depression symptoms. For Significant Relationship Social Support and depression symptoms, only one personality trait was a significant moderator. Agreeableness, Extroversion, and Neuroticism did not significantly moderate the relationship between Significant Relationship Social Support and CES-D scores; however, Conscientiousness was significant.

The results of the Conscientiousness regression are presented in Table 12. The regression accounted for a significant amount of variance in depression symptoms, R^2 = .26, $F(8, 85) = 3.64$, $p = .001$. Following the initial step with concomitant variables entered (as noted previously), the second step of the regression, which included Conscientiousness and Significant Relationship Social Support, was non-significant and explained 5% more of the variance in depression symptoms than the concomitant variables alone, $\Delta R^2 = .05$, $\Delta F(2, 86) = 2.85$, $p = .06$. For the third step of the regression, the interaction between Conscientiousness and Significant Relationship Social Support accounted for 6% more of the variance in depression symptoms than the concomitant and main effect variables alone, $\Delta R^2 = .06$, $\Delta F(1, 85) = 6.29$, $p = .01$. This significant finding indicates that conscientiousness moderates the relation between perceived social support from a significant relationship and depression symptoms.

To interpret the interaction effect, simple slopes analysis was conducted (Aiken & West, 1991; Holmbeck, 2002). Conscientiousness was divided into a high and low group, where high was considered scores one standard deviation above the mean, and

low was one standard deviation below the mean. Then separate regressions were conducted for the high and low groups. Simple slopes analysis revealed that Significant Relationship Social Support was not significantly associated with depression symptoms when Conscientiousness was one standard deviation above the mean, β = -.24, *p* = .09. Similarly, Significant Relationship Social Support was not significantly related to depression symptoms when Conscientiousness was one standard deviation below the mean, β = .26, *p* = .08. The non-significant slopes are shown in Figure 1.

CHAPTER 4

DISCUSSION

The present study found that 32% of early childhood teachers in our sample had high depression symptom scores. This finding is much higher than the point prevalence rate of 9% in the general population of the United States, and it is consistent with previous studies that have demonstrated that approximately one-third of teachers are high in depression symptoms (Jurado et al., 1998; McLaughlin, 2010; Schonfeld, 1990). Thus, this finding is likely a true reflection of depression symptom rates in American teachers of young children.

Based on the present study, early childhood teachers are more likely to have depression symptoms if they are older, have a higher salary, are more educated, teach in Ohio, or teach primary grades, compared to other teachers of young children. Although salary and depression symptoms were positively correlated, it appears that this relation was significant due to the level being taught. Teachers typically have a higher income if they are teaching primary school compared to childcare or preschool. The correlation between salary and depression symptoms was no longer significant when their relationship was examined only among primary school teachers.

Approximately half of the teachers in this study taught in the state of Ohio. There are several potential reasons why these teachers had higher depression scores than out-of-state teachers. In Ohio it is mandatory for children to attend kindergarten, whereas in other states – such as Michigan – it is not mandatory (National Center for Education Statistics, 2011). Since all children must attend kindergarten in Ohio, this requirement is likely to create a heavier workload for early childhood teachers. In

preschool and childcare centers, Ohio has higher child to teacher ratios compared to many other states, including Michigan (Child Care Aware of America, 2013). Also, Ohioan teachers have the added stress in recent years of potentially losing work benefits, such as a recent push in 2011 to remove the collective bargaining rights of teachers' unions (Greenhouse, 2011). Both of these factors could lead to higher stress levels for teachers in Ohio, and work stress has been linked to increased burnout and depressive symptoms in teachers (Steinhardt, Jaggars, Faulk, & Gloria, 2011).

In this study, teachers had higher depression symptoms if they taught primary school and they had fewer depression symptoms if they taught in a childcare or preschool facility. This is unsurprising given that, beginning with kindergarten, teachers have to meet more state and federal regulations, whereas there are fewer restrictions placed on childcare and preschool teachers. For example, the No Child Left Behind Act started in 2001 requires that all states implement annual standardized testing within their public schools, and that students must achieve state-determined scores in order for a public school to receive federal funding (U.S. Department of Education, n.d.). This begins in primary school and does not affect childcare or preschool facilities. The added pressure and scrutiny of teachers within public schools due to state-mandated standardized testing has been linked to negative attitudes towards teaching and increased stress among teachers (Mulvenon, Stegman, & Ritter, 2005; Smith & Kovacs, 2011).

Given that nearly one-third of early childhood teachers are high in depression symptoms, it is important to investigate factors that might be related to fewer depression

symptoms. The present study specifically explored personality, social support, and school climate.

Personality and Depression

It was expected that high levels of agreeableness, conscientiousness, and extroversion, along with low levels of neuroticism and openness would be related to fewer depression symptoms in early childhood teachers. This study only partially confirmed this hypothesis. Contrary to predictions, agreeableness, conscientiousness, and openness were not directly related to depression scores in our sample of early childhood teachers. However, high extroversion and low neuroticism were related to fewer depression symptoms. Neuroticism and extroversion separately accounted for 4% of the variance in depression symptoms. These findings show early childhood teachers are less likely to have depression symptoms if they are more outgoing, sociable, emotionally stable, and calm.

Previous studies have found that high levels of extroversion and low levels of neuroticism are associated with having fewer depression symptoms (Chien et al., 2007; McLaughlin, 2010; Rosellini & Brown, 2011; Vearing & Mak, 2007). Although the cross-sectional nature of this study prevents us from claiming that extroversion and neuroticism cause depression symptoms, it is unlikely that depression causes changes in personality. Instead, personality likely predisposes an individual to develop depression. Personality traits are generally considered enduring characteristics of an individual that change little over time and across situations (McCrae et al., 2000; McCrae & Costa, 1999). In addition, genetic studies suggest that neuroticism has a high phenotypic relationship with depression and thus contributes to the genetic risk of an

individual developing depression (Hettema, Neale, Myers, Prescott, & Kendler, 2006; Kendler & Myers, 2010). Personality traits also appear to predict changes in depression over time. For example, a longitudinal study of adolescents found that high levels of neuroticism and low levels of extroversion predicted depression symptoms five months later (Wetter & Hankin, 2009).

Despite our hypotheses, agreeableness, conscientiousness, and openness were not directly linked to depression symptoms. This is not entirely unexpected since a recent study of teachers found that agreeableness and conscientiousness were not significantly related to depression symptoms (McLaughlin, 2010). In addition, other studies have found that agreeableness, conscientiousness, and openness account for less of the genetic risk for depression in comparison to how neuroticism relates to depression (Kendler & Myers, 2010), providing further evidence that these personality traits may not be important contributors to the development of depression.

Our exploratory hypothesis concerning whether personality openness moderates the relation between school openness and depression symptoms, proved not to be supported. We decided to explore this hypothesis because personality and school openness were related in a previous study (McLaughlin, 2010). However, given that there was no direct relation between personality openness and depression symptoms among early childhood teachers in the present study, it is unsurprising that personality openness was not a significant moderator.

Social Support and Depression

It was expected that early childhood teachers who perceived that they had social support from their school administrator or a significant relationship outside of their work,

would have fewer depression symptoms. This hypothesis was partially supported, as having social support from teachers' administrators (but not from significant others) was directly related to fewer depression symptoms. Administrator's social support accounted for approximately 23% of the variance in depression symptoms, such that teachers had fewer depression symptoms if they perceived their school administrators as giving them more social support.

Previous studies have observed that perceived social support from a supervisor or administrator predicts less depression symptoms (Dormann & Zapf, 1999; Veenstra, 2010) and burn-out (Brouwers et al., 2001; Greenglass et al., 1994). The present study provides further evidence for this association and shows that this link occurs in early childhood teachers. Administrator social support is important to consider because it could potentially protect teachers from developing depression. Another study, of special education teachers in Israel, found that organizational support, defined as feeling supported by supervisors and co-workers – a concept similar to administrator social support – moderated the relation between stress and negative affect (Hamama, Ronen, Shachar, & Rosenbaum, 2013). Although the present study's participants are not special education teachers, this finding emphasizes the importance of administrators' support in the workplace, particularly when teachers work in conditions that are highly stressful. Future research should investigate whether administrator social support moderates the link between stress and depression in early childhood teachers.

It is surprising that perceived social support from teachers' significant relationships outside their working environment was not related to depression symptoms. The positive effects of such social support have been well-documented in

previous studies (Clara et al., 2003; Cronkite et al., 1998; Gladstone et al., 2007; Schonfeld, 2001; Swindle et al., 1989). It is possible that there was too little variation in this social support variable among the teachers in this study. The participants were allowed to choose which significant relationship they rated, and many teachers' responses indicated that they had a strongly supportive relationship regardless of whether they were depressed. Thus, this variable was highly skewed toward reporting good social support outside of the workplace.

We also investigated whether the relationship between social support and depression symptoms was moderated by personality. Early childhood teachers who felt that they had low social support from a significant relationship were more likely to have higher depression symptoms only if these teachers also were high in conscientiousness. Teachers who were low in conscientiousness showed the opposite relation: they were more likely to have high depression symptoms if they received high social support from a significant relationship. Unfortunately, neither of these relationships was significant, even though the overall moderation analysis was statistically significant. Both analyses approached significance, so it is likely that they may have been significant if we had a larger sample size and thus more power. It is important that future studies examine this potential relationship, as this could help clarify how receiving social support from a close relationship plays a role for early childhood teachers who are at risk for depression due to certain personality characteristics.

School Climate and Depression

Our predictions for school climate were that increased openness from administrators and other teachers would be related to fewer depression symptoms

among the teachers. In the current study, other teachers' openness accounted for approximately 4% of the variance in depression symptoms, a significant proportion. This suggests that teachers have fewer depression symptoms if they feel that their co-workers are more involved, supportive, and know each other well. Administrator's openness was not significantly associated with depression symptoms.

Other studies have demonstrated that other teachers' openness is related to positive outcomes, such as increased trust (Hoy et al., 2002), greater teacher commitment (Hoy et al., 1990), and fewer depression symptoms (McLaughlin, 2010). However, this link has not been established in early childhood teachers until now. This is especially important because an open school climate is also associated with teacher empowerment, which in turn is related to higher student academic achievement (Sweetland & Hoy 2000). Future studies should investigate whether an open climate affects young children's academic and psychosocial functioning within daycare and preschool facilities, and whether this relation is moderated by early childhood teachers' symptoms of depression.

Unexpectedly, administrator's openness was not related to depression symptoms. Principal openness was associated with depression symptoms in a study of teachers spanning all grade levels (McLaughlin, 2010). Perhaps administrator openness is less important among early childhood teachers. Within public school districts, the principal is typically in a position of power that is distinct from the role of teachers within the school system. For instance, the principal has her own office, does not teach classes, and has responsibilities that teachers are unlikely to have, such as assuring that state policies are being implemented. This obvious distinction between roles might

be less well-defined among early childhood teachers, particularly those working in a childcare or preschool facility. Compared to grade school principals, preschool and childcare administrators get paid less, and have fewer education and certification requirements (United States Department of Labor, 2012). Because there are so many distinctions between these roles, perhaps the impact of administrator's openness on teachers' depression varies for early childhood teachers compared to teachers of higher grades.

Limitations

The present study had several limitations beyond those previously mentioned. Initially, 159 teachers agreed to participate in the study, but only 97 teachers completed the entire study. The majority of these non-completers did not complete the demographic questions, which were the first questions of the survey. It is possible that the 62 teachers who did not complete the survey were more depressed and thus less likely to answer the questionnaires due to symptoms of depression, such as fatigue and difficulty concentrating (American Psychiatric Association, 2000). However, 15 teachers completed the depression scale but not the rest of the survey, and they did not have significantly different depression scores compared to teachers who completed the survey. If the 62 non-completers were more depressed, then this would suggest that our finding of high depression symptoms in early childhood teachers is actually a conservative estimate, and that the rates could actually be higher than what was found in the present study.

Although teaching in Ohio was related to more depression symptoms, it is important to consider that there are some recruitment differences that may have

affected this finding. The majority of Ohio participants were recruited through public email lists and not through the NAEYC e-newsletter. It is possible that teachers who are more depressed are also more likely to respond to these emails, or that members of NAEYC are less depressed than non-members. Future studies should carefully examine whether teachers from Ohio or other states are at risk for more depression and if so, why.

Another limitation of the present study is that the CES-D is not a diagnostic tool and thus we cannot claim with certainty that 32% of our sample of early childhood teachers meet criteria for Major Depressive Disorder. In our analyses, we compared this 32% to the 9% point prevalence rate of Major Depressive Disorder found in the general population among women. The 32% point prevalence of the CES-D within the present study is much closer to the lifetime prevalence rate of depression in the general population, which is between 10% and 25% for women (American Psychiatric Association, 2000). Furthermore, our findings were not compared to the rate of clinically significant CES-D scores among the general population. It is possible that the CES-D overestimates the prevalence of depression in individuals. Rates of high depression symptoms using a cut-off score of 16 on the CES-D are as high as 21% among the general population (Radloff, 1977) and 45% among college students (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995).

In addition, the subjective nature of the questionnaires makes it impossible to definitively assert that a more open school climate is related to fewer depression symptoms, or that low neuroticism and high extroversion are linked to lower depression symptom rates. Because these questionnaires are not objective, it is possible that

depressed early childhood teachers are more likely to view their school as being less open, or are more prone to rating themselves as having high neuroticism and low extroversion scores. However, personality is typically measured via self-report, and previous studies have shown that neuroticism in depressed individuals remains high even after the depressive episode has remitted (Bagby et al., 1995). This suggests that these personality scores represent true personality differences between teachers and are not simply a reflection of being depressed.

Conclusions

If nearly one-third of early childhood teachers have significant depression symptoms – a striking difference from the 9% point prevalence rate in the general population – it is clear that these teachers are a vulnerable population in need of intervention. The high rates of depression symptoms among early childhood teachers are alarming because depression can affect teaching quality. Although research in this area is limited, a few studies have shown that stress can affect the quality of teaching and care-giving in the workplace. For Dutch women working in childcare facilities, higher levels of cortisol – a stress hormone – predicted lower quality care-giving behavior later in the day (De Schipper, Riksen-Walraven, Geurts, & De Weerth, 2009). In terms of depression, caregivers who are less sensitive and more withdrawn in their caregiver-child interactions have higher depression symptoms (Hamre & Pianta, 2004). In addition, depressive symptoms in kindergarten teachers are related to poorer classroom quality, and this association is stronger than the effect of teaching experience or teachers' educational background on classroom quality (La Paro et al., 2009). Taken together, these studies suggest that there is a strong likelihood that early childhood

teachers' depression has a negative effect on their ability to provide a quality educational environment for their students.

The quality of teaching is important because instructional quality has a direct effect on students and their performance in the classroom. For example, pre-kindergarteners have better academic and social outcomes if they have consistent emotional support from their teachers (Curby, Brock, & Hamre, 2013). Similar findings have been found for first graders, such that children who have an emotionally supportive teacher are less aggressive to other students (Merritt, Wanless, Rimm-Kaufman, Cameron, & Peugh, 2012). Furthermore, teaching quality can have lasting effects on early childhood students beyond the school year during which the child is exposed to a particular teacher. In Belgium, researchers found that teacher-student closeness during first grade continued to predict children's psychosocial adjustment through third grade, even after controlling for students' initial levels of psychosocial adjustment before they entered first grade (Buyse, Verschueren, Verachtert, & Van Damme, 2009). Students who had a close relationship with their first grade teacher were more apt to be liked by their peers, have higher feelings of well-being, and be less aggressive in second and third grade. Teacher stress and classroom organization also affect students' learning. For example, Finnish kindergarteners were more motivated to learn and had better scores of phonological awareness if their teacher was less stressed and had a well-organized classroom (Pakarinen et al., 2010).

Despite evidence that there are high rates of depression symptoms among early childhood teachers, and research that indicates how this can affect teaching quality and young students' academic and psychosocial adjustment, little attention has been given

to the mental health of persons who teach young children. It is clear that intervention is needed at multiple levels to help these teachers. The findings of this project suggest changes that could be implemented at the organizational level. Increasing the openness of the school climate and social support from those who administer the schools and facilities where teachers work are crucial steps that could prevent depression among teachers. Unfortunately, these characteristics may be difficult to change. There are national and state-wide pressure on schools to improve their standardized-test performance, which places school administrators and teachers under great stress, and decreases the likelihood that schools can become more open in climate (Abrams, Pedulla, & Madaus, 2003; Mulvenon et al., 2005; Smith & Kovacs, 2011).

One intervention option at the school level could be to offer resources to teachers, such as after-school meetings that teach mindfulness-based techniques to reduce stress. When primary school teachers have been taught mindfulness-based stress reduction, their depression and stress have decreased (Gold et al., 2010). A ten-week mindfulness-based training program also helped improve depression, anxiety, and general distress scores for secondary school teachers (Franco, Manas, Cangas, Moreno, & Gallego, 2010). This approach could be especially important for early childhood teachers who are at risk of developing depression symptoms due to personality characteristics, such as being high in neuroticism and low in extroversion. Unfortunately, neither of these mindfulness-based studies was conducted on early childhood teachers within the United States, further confirming that the psychological well-being of American teachers is often ignored.

It is important to note that there is great concern for depression among individuals in other service professions outside of teaching. High rates of depression have been found among social workers (Siebert, 2004) and nurses (Ruggiero, 2005; Welsh, 2009). Furthermore, physicians have significantly higher suicide rates compared to the general population (Schernhammer & Colditz, 2004). Given that each of these professions involve providing a service to others, intervention efforts should be made across all service professions, particularly those that are at a high risk for developing depression.

It is striking that almost one-third of early childhood teachers could be high in depression symptoms, but little has been done to examine this further or work to prevent or reduce depression. Future studies should explore how teachers' depression symptoms affect the quality of their work in classrooms or childcare facilities. We need to have more understanding of how this depression impacts students' academic performance and psychological well-being. Preliminary evidence suggests that early childhood teachers can be helped by improving support from their administrators and increasing the openness of the institutional climate in which they work. In addition, early childhood teachers could benefit from interventions that are implemented where they teach. Such assistance could include mindfulness training to deal with stress and the demands of their working environment. It is crucial that we tackle these issues in order to help our early childhood teachers and their students, who could be affected by these problems, which at present are largely unaddressed.

APPENDIX A

Table 1

Demographic Participant Characteristics

Characteristic	Percent of Early Childhood Teachers (N = 97)
Gender	
Female	96.9
Male	3.1
Ethnicity	
European American	91.1
African American	2.2
Hispanic American	3.3
Multi-racial or Other	3.4
Marital Status	
Single	15.6
Married	75.0
Divorced/Separated	8.3
Widowed	1.0
Education	
High School or Associates Degree	11.3
Bachelor's Degree	33.0
Master's Degree	55.7
School Type	
Preschool/Childcare	28.9
Regular District	62.9
Other	8.2
Years Spent Teaching	
0 – 2	6.3
3 – 8	22.9
9 – 14	24.0
15 – 20	20.8
≥ 21	26.0
Level Taught	
Childcare - Preschool (Age 0 – 4)	50.5
Kindergarten - Grade 3	57.7
Location	
Ohio	51.5
Michigan	20.6
Other	27.9

Table 2

Example Items From Measures of Depression, Social Support, Personality, and School Climate

Variable Measured	Instrument	Scale	Example Item
Depression	Center for Epidemiologic Studies Depression Scale (CES-D)		I had crying spells.
Personality	Big Five Mini-Markers	Agreeableness Conscientiousness Extraversion Neuroticism Openness	Sympathetic Organized Talkative Moody Intellectual
Social Support	Social Provisions Scale		Can you depend on your school administrator to help you if you really need it?
School Climate	Organizational Climate Description Questionnaire for Elementary Schools (OCDQ-RE)	Administrator Openness Other Teachers' Openness	The school administrator treats teachers as equals. Teachers help and support each other.

Note. Items for each measure are rated from low to high.

Table 3

Descriptive Statistics and Internal Consistency Estimates for Measures

Measures	Mean	Standard Deviation	Internal Consistency
CES-D[a]	12.09	9.69	.92
Big Five Mini-Markers			
Agreeableness	7.80	0.71	.70
Conscientiousness	7.06	1.15	.81
Extraversion	6.09	1.42	.87
Neuroticism	3.92	1.30	.80
Openness	6.78	0.84	.66
Social Provisions Scale			
Administrator	26.74	6.60	.92
Significant Relationship[a]	33.19	2.74	.77
OCDQ-RE			
Principal Openness	2.75	0.51	.86
Other Teachers' Openness	2.86	0.45	.86

Note. Higher mean scores indicate more of the construct named. Internal consistencies measured with Cronbach's *alpha.*

[a]These scales were transformed in subsequent analyses to adjust for the non-normality of their distribution.

Table 4

Teacher Characteristics Associated with Symptoms of Depression

Characteristics	CES-D Mean	CES-D SD	% ≥ 16	% ≥ 20
All Participants	12.09	9.69	32.00	20.60
Age[a]				
Younger	14.47	10.19	42.60	27.70
Older	9.69	8.74	22.90	14.60
Salary[a]				
Lower	10.21	8.78	27.10	14.60
Higher	14.05	10.36	38.30	27.70
Education				
H.S. or Associates	9.36	10.05	18.20	18.20
Bachelor's Degree	10.84	9.94	28.10	18.80
Master's Degree	13.40	9.42	37.70	22.60
Level Taught				
Childcare – Preschool	9.68	8.83	29.20	18.50
Kindergarten – Grade 3	13.88	9.99	38.70	25.80
Location				
Michigan	11.05	8.61	25.00	10.00
Ohio	14.31	9.81	38.80	24.50
Other State	8.82	9.50	25.90	22.20

Note. H.S. = High School; Percentages indicate percent of participants with a CES-D score ≥ 16 or 20.

[a]Median split used to categorize groups.

Table 5

Correlations Among Variables

					R				
Variable	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Agreeableness	.33***	.29**	-.50***	.28**	.36***	.14	.20*	.40***	-.47***
2. Conscientiousness		.21*	-.42***	.12	.17	.15	.16	.13	-.26**
3. Extraversion			-.21*	.20*	.21*	.06	-.01	.33***	-.33***
4. Neuroticism				-.02	-.30**	.03	-.19	-.33***	.56***
5. Openness					.19	.06	.16	.13	-.25*
6. Administrator Social Sup.						.04	.72***	.57***	-.50***
7. Sig. Relationship Social Sup.							.03	.02	-.04
8. Administrator's Openness								.47***	-.41***
9. Other Teachers' Openness									-.41***
10. Depression Symptoms									

Note. These are Pearson correlations, and thus are not adjusted for any other variable that could be influencing the correlation.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Table 6

Personality Traits' Prediction of Early Childhood Teachers' Depression Symptoms

Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.22**	.08*					
Age x Neuroticism			-.01	.01	-.04	-0.41	.68
Education x Neuroticism			.45	.16	.29	2.80	.01
Step 3	.26***	.04*					
Agreeableness x Neuro.			-.34	.17	-.20	-2.00	.05
Step 4	.48***	.22***					
Conscientiousness			.04	.12	.03	0.35	.72
Extroversion			-.26	.10	-.25	-2.53	.01
Neuroticism			.56	.16	-.12	-1.32	.19
Openness							
Step 5	.49***	.01					
Agreeableness			-.27	.22	-.13	-1.20	.24
Step 4	.49***	.23***					
Agreeableness			-.25	.22	-.12	-1.15	.26
Extroversion			-.23	.10	-.22	-2.28	.03
Neuroticism			.47	.17	.41	2.79	.01
Openness			-.16	.16	-.09	-1.00	.32
Step 5	.49***	< .01					
Conscientiousness			.06	.12	.05	0.51	.61
Step 4	.46***	.20***					
Agreeableness			-.35	.23	-.17	-1.53	.13
Conscientiousness			.02	.12	.02	0.20	.84
Neuroticism			.57	.17	.50	3.26	.01
Openness			-.24	.16	-.13	-1.45	.15
Step 5	.49***	.03*					
Extroversion			-.24	.10	-.23	-2.32	.02

Note: $*p \leq .05$; $** p \leq .01$; $***p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 6 Continued

Personality Traits' Prediction of Early Childhood Teachers' Depression Symptoms

Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 4	.44***	.18***					
Agreeableness			-.49	.22	-.23	-2.24	.03
Conscientiousness			-.02	.12	-.01	-0.13	.90
Extroversion			-.29	.10	-.28	-2.82	.01
Openness			-.14	.17	-.08	-0.83	.41
Step 5	.49***	.05**					
Neuroticism			.49	.17	.43	2.82	.01
Step 4	.48***	.23***					
Agreeableness			-.32	.22	-.15	-1.48	.14
Conscientiousness			.06	.12	.05	0.50	.62
Extroversion			-.26	.10	-.25	-2.57	.01
Neuroticism			.48	.17	.42	2.78	.01
Step 5	.49***	.01					
Openness			-.16	.16	-.09	-1.00	.32
Final – All entered	.49***						
Agreeableness			-.27	.22	-.13	-1.20	.24
Conscientiousness			.06	.12	.05	0.51	.61
Extroversion			-.24	.10	-.23	-2.32	.02
Neuroticism			.49	.17	.43	2.82	.01
Openness			-.16	.16	-.09	-1.00	.32

Note: $*p \leq .05$; $** p \leq .01$; $***p \leq .001$

Table 7

Extroversion's and Neuroticism's Prediction of Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.22**	.08*					
Age x Neuroticism			-.01	.01	-.04	-0.41	.68
Education x Neuroticism			.45	.16	.29	2.80	.01
Step 3	.26***	.04*					
Agreeableness x Neuro.			-.34	.17	-.20	-2.00	.05
Step 4	.39***	.13***					
Agreeableness			-.64	.22	-.31	-2.89	.01
Conscientiousness			-.08	.13	-.06	-0.64	.53
Openness			-.23	.17	-.13	-1.34	.18
Step 5	.49***	.11***					
Extroversion			-.24	.10	-.23	-2.32	.02
Neuroticism			.49	.17	.43	2.82	.01
Step 6	.51***	.02					
Extroversion x Neuro.			-.15	.08	-.19	-1.86	.07
Step 5	.47***	.09**					
Neuroticism			.54	.17	.47	3.12	.01
Extroversion x Neuro.			-.12	.08	-.16	-1.49	.14
Step 6	.51***	.04**					
Extroversion			-.26	.10	-.25	-2.57	.01
Step 5	.47***	.09**					
Extroversion			-.32	.10	-.30	-3.08	.01
Extroversion x Neuro.			-.17	.08	-.23	-2.12	.04
Step 6	.51***	.04**					
Neuroticism			.45	.17	.39	2.62	.01
Final – All entered	.51***						
Extroversion			-.26	.10	-.25	-2.57	.01
Neuroticism			.45	.17	.39	2.62	.01
Extroversion x Neuro.			-.15	.08	-.19	-1.86	.07

Note: $*p \leq .05$; $** p \leq .01$; $***p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 8

Social Support and Its Prediction of Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.15**	< .01					
Salary x Administrator SS			< .01	< .01	.07	0.66	.51
Step 3	.39***	.24***					
Administrator SS			-.11**	.02	-.50	-5.68	< .001
Sig. Relationship SS			.34	.48	.06	0.70	.48
Step 2	.38***	.24***					
Salary x Administrator SS			< .01	< .01	.06	0.64	.53
Administrator SS			-.11	.02	-.50	-5.71	< .001
Step 3	.39***	< .01					
Sig. Relationship SS			.34	.48	.06	0.70	.48
Step 2	.16*	.01					
Salary x Administrator SS			< .01	< .01	.07	0.66	.51
Sig. Relationship SS			.37	.56	.07	0.66	.51
Step 3	.39***	.23***					
Administrator SS			-.11**	.02	-.50	-5.68	< .001
Final – all entered	.39***						
Salary x Administrator SS			< .01	< .01	.06	0.64	.52
Administrator SS			-.11**	.02	-.50	-5.68	< .001
Sig. Relationship SS			.34	.48	.06	0.70	.48

Note: SS = Social Support; *$p \leq .05$; ** $p \leq .01$; ***$p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 9

School Openness and Its Prediction of Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.27***	.12***					
Salary x Admin. Open			< 0.01	< .01	0.04	0.42	.68
Level x Admin. Open			-1.56	.43	-1.60	-3.60	.001
Step 3	.36***	.09**					
Admin. Openness			-0.69	.41	-0.24	-1.69	.09
Teacher's Openness			-0.78	.35	-0.24	-2.22	.03
Step 4	.36***	<.01					
Administrator x Teacher			-0.03	.64	-0.01	-0.04	.97
Step 3	.32***	.05*					
Admin. Openness			-1.01	.40	-0.35	-2.52	.01
Administrator x Teacher			-0.01	.65	-0.01	-0.01	.99
Step 4	.36***	.04*					
Teacher's Openness			-0.78	.35	-0.24	-2.21	.03
Step 3	.34***	.07*					
Teacher's Openness			-0.98	.34	-0.30	-2.93	.01
Administrator x Teacher			0.13	.64	0.02	0.21	.84
Step 4	.36***	.02					
Admin. Openness			-0.70	.42	-0.24	-1.67	.10
Final – All entered	.36***						
Salary x Admin. Open			<0.01	< .01	0.10	0.88	.38
Level x Admin. Open			-0.33	.59	-0.33	-0.56	.58
Admin. Openness			-0.70	.42	-0.24	-1.67	.10
Teacher's Openness			-0.78	.35	-0.24	-2.21	.03
Administrator x Teacher			-0.03	.64	-0.01	-0.04	.97

Note: Level = Level Taught; *$p \leq .05$; ** $p \leq .01$; ***$p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 10

Personality Openness as a Moderator of Administrator's Openness and Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.27***	.12***					
Salary x Admin. Open			< 0.01	< .01	0.04	0.42	.68
Level x Admin. Open			-1.56	.43	-1.57	-3.60	.001
Step 3	.34***	.07**					
Admin. Openness			-0.95	.39	-0.33	-2.43	.02
Personality Openness			-0.27	.16	-0.15	-1.66	.10
Step 4	.35***	.01					
Personality x Admin.			0.36	.33	0.11	1.12	.27
Step 3	.32***	.05					
Personality Openness			-0.30	.17	-0.17	-1.78	.08
Personality x Admin.			0.50	.33	0.15	1.53	.13
Step 4	.35***	.04*					
Admin. Openness			-0.86	.40	-0.30	-2.17	.03
Step 3	.33***	.06*					
Admin. Openness			-0.92	.40	-0.32	-2.29	.02
Personality x Admin.			0.37	.33	0.11	1.14	.26
Step 4	.35***	.02					
Personality Openness			-0.27	.16	-0.15	-1.64	.11
Final– All entered	.35***						
Salary x Admin. Open			<0.01	< .01	0.10	0.97	.34
Level x Admin. Open			-0.66	.59	-0.66	-1.12	.27
Admin. Openness			-0.86	.40	-0.30	-2.17	.03
Personality Openness			-0.27	.16	-0.15	-1.64	.11
Personality x Admin.			0.36	.33	0.11	1.12	.27

Note: Level = Level Taught; *$p \leq .05$; ** $p \leq .01$; ***$p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 11

Personality Openness as a Moderator of Other Teachers' Openness and Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.32***	.17***					
Teacher's Openness			-1.23	.30	-.38	-4.12	< .001
Personality Openness			-0.27	.17	-.15	-1.62	.12
Step 3	.32***	<.01					
Personality x Teacher			0.10	.38	.03	0.25	.80
Step 2	.30***	.15***					
Teacher's Openness			-1.30	.30	-.40	-4.32	<.001
Personality x Teacher			-0.09	.37	-.02	-0.23	.82
Step 3	.32***	.02					
Personality Openness			-0.28	.17	-.16	-1.61	.11
Step 2	.19**	.04					
Personality Openness			-0.39	.19	-.22	-2.09	.04
Personality x Teacher			0.25	.41	.06	0.60	.55
Step 3	.32***	.13***					
Teacher's Openness			-1.23	.30	-.37	-4.06	< .001
Final – all entered	.32***						
Teacher's Openness			-1.23	.30	-.37	-4.06	< .001
Personality Openness			-0.28	.17	-.16	-1.61	.11
Personality x Teacher			0.10	.38	.03	0.25	.80

Note: $*p \leq .05$; $** p \leq .01$; $***p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

Table 12

Conscientiousness as a Moderator of Social Support from a Significant Relationship and Early Childhood Teachers' Depression Symptoms Based on Hierarchical Multiple Regression Analyses

	Depression Symptoms						
Predictor	R^2	ΔR^2	B	S.E. B	Beta	t	*p*
Step 1	.15**						
Concomitant Variables[a]							
Step 2	.20**	.05					
Significant Relationship			0.21	.55	.04	0.39	.70
Conscientiousness			-0.29	.13	-.23	-2.29	.02
Step 3	.26***	.06**					
Relationship x Cons.			-1.18	.47	-.24	-2.51	.01
Step 2	.21**	.06*					
Significant Relationship			0.39	.55	.07	0.71	.48
Relationship x Cons.			-1.17	.48	-.24	-2.42	.02
Step 3	.26***	.05*					
Conscientiousness			-0.30	.13	-.23	-2.39	.02
Step 2	.25***	.11**					
Conscientiousness			-0.30	.12	-.24	-2.47	.02
Relationship x Cons.			-1.18	.47	-.24	-2.52	.01
Step 3	.26***	<.01					
Significant Relationship			0.23	.54	.04	0.42	.68
Final – All entered	.26***						
Significant Relationship			0.23	.54	.04	0.42	.68
Conscientiousness			-0.30	.13	-.23	-2.39	.02
Relationship x Cons.			-1.18	.47	-.24	-2.51	.01

Note: Cons. = Conscientiousness; *$p \leq .05$; ** $p \leq .01$; ***$p \leq .001$

[a]Concomitant variables include age, salary, education, location, and level taught.

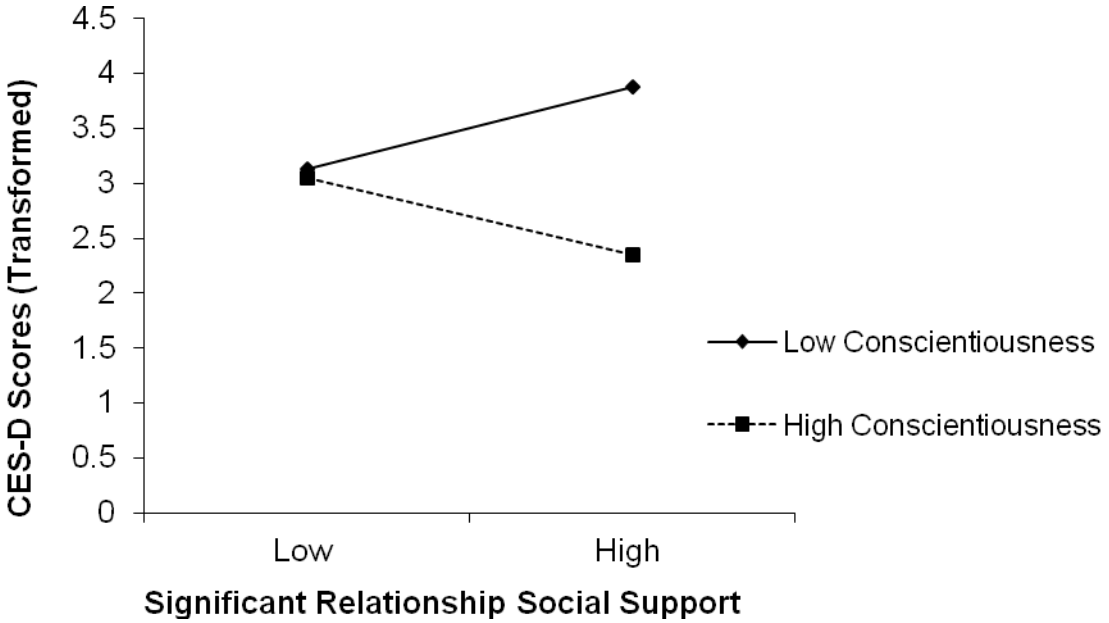

Figure 1. Conscientiousness moderates the relationship between significant relationship social support and depression symptoms in early childhood teachers.

APPENDIX B

Center for Epidemiologic Studies Depression Scale (CES-D)

Below is a list of the ways you might have felt or behaved. Please tell us how often you have felt this way during the past week by circling “1” for rarely or none of the time (less than 1 day), “2” for some or a little of the time (1-2 days), “3” for occasionally or a moderate amount of time (3-4 days), or “4” for most or all of the time (5-7 days).

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	1	2	3	4
2. I did not feel like eating; my appetite was poor.	1	2	3	4
3. I felt that I could not shake off the blues even with help from my family or friends.	1	2	3	4
4. I felt I was just as good as other people.	1	2	3	4
5. I had trouble keeping my mind on what I was doing.	1	2	3	4
6. I felt depressed.	1	2	3	4
7. I felt that everything I did was an effort.	1	2	3	4
8. I felt hopeful about the future.	1	2	3	4
9. I thought my life had been a failure.	1	2	3	4
10. I felt fearful.	1	2	3	4
11. My sleep was restless.	1	2	3	4
12. I was happy.	1	2	3	4
13. I talked less than usual.	1	2	3	4
14. I felt lonely.	1	2	3	4
15. People were unfriendly.	1	2	3	4
16. I enjoyed life.	1	2	3	4
17. I had crying spells.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt that people dislike me.	1	2	3	4
20. I could not get "going."	1	2	3	4

40-Item Big Five Mini-Marker Set

Please use this list of common human traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to be in the future. Describe yourself as you are generally or typically, as compared with other persons you know of the same sex and of roughly your same age.

For each trait, please indicate how accurately the trait describes you using the following scale:

	Inaccurate					Accurate				
	Extremely	Very	Moderately	Slightly	Neither	Slightly	Moderately	Very	Extremely	
	1	2	3	4	5	6	7	8	9	
1. Bashful	1	2	3	4	5	6	7	8	9	
2. Bold	1	2	3	4	5	6	7	8	9	
3. Careless	1	2	3	4	5	6	7	8	9	
4. Cold	1	2	3	4	5	6	7	8	9	
5. Complex	1	2	3	4	5	6	7	8	9	
6. Cooperative	1	2	3	4	5	6	7	8	9	
7. Creative	1	2	3	4	5	6	7	8	9	
8. Deep	1	2	3	4	5	6	7	8	9	
9. Disorganized	1	2	3	4	5	6	7	8	9	
10. Efficient	1	2	3	4	5	6	7	8	9	
11. Energetic	1	2	3	4	5	6	7	8	9	
12. Envious	1	2	3	4	5	6	7	8	9	
13. Extraverted	1	2	3	4	5	6	7	8	9	
14. Fretful	1	2	3	4	5	6	7	8	9	
15. Harsh	1	2	3	4	5	6	7	8	9	
16. Imaginative	1	2	3	4	5	6	7	8	9	
17. Inefficient	1	2	3	4	5	6	7	8	9	
18. Intellectual	1	2	3	4	5	6	7	8	9	

19. Jealous	1	2	3	4	5	6	7	8	9
20. Kind	1	2	3	4	5	6	7	8	9
21. Moody	1	2	3	4	5	6	7	8	9
22. Organized	1	2	3	4	5	6	7	8	9
23. Philosophical	1	2	3	4	5	6	7	8	9
24. Practical	1	2	3	4	5	6	7	8	9
25. Quiet	1	2	3	4	5	6	7	8	9
26. Relaxed	1	2	3	4	5	6	7	8	9
27. Rude	1	2	3	4	5	6	7	8	9
28. Shy	1	2	3	4	5	6	7	8	9
29. Sloppy	1	2	3	4	5	6	7	8	9
30. Sympathetic	1	2	3	4	5	6	7	8	9
31. Systematic	1	2	3	4	5	6	7	8	9
32. Talkative	1	2	3	4	5	6	7	8	9
33. Temperamental	1	2	3	4	5	6	7	8	9
34. Touchy	1	2	3	4	5	6	7	8	9
35. Uncreative	1	2	3	4	5	6	7	8	9
36. Unenvious	1	2	3	4	5	6	7	8	9
37. Unintellectual	1	2	3	4	5	6	7	8	9
38. Unsympathetic	1	2	3	4	5	6	7	8	9
39. Warm	1	2	3	4	5	6	7	8	9
40. Withdrawn	1	2	3	4	5	6	7	8	9

Social Provisions Scale – School Administrator

Here are some questions about you and your school leader. That leader might be called Principal, or Director, but the title isn't the important thing, it's the authority over the place that matters. We want you to think of that person on site where you work, who is in charge of what happens in the school, no matter what his or her title is. We will call this person the administrator in the questions that follow.

In answering this set of questions, please think about your current relationships with your administrator. If you feel a question accurately describes your relationship with your school administrator, you would mark “yes”. If the question does not describe your relationship, you would mark “no”. If the question sometimes describes your relationship, you would mark “sometimes.”

	No	Sometimes	Yes
1. Can you depend on your school administrator to help you if you really need it?	1	2	3
2. Do you feel you cannot turn to your school administrator for guidance in times of stress?	1	2	3
3. Does the school administrator enjoy the same social activities that you do?	1	2	3
4. Do you feel personally responsible for the well-being of your school administrator?	1	2	3
5. Do you feel your school administrator does not respect your skills and abilities?	1	2	3
6. If something went wrong, do you feel that your school administrator would not come to your assistance?	1	2	3
7. Does your relationship with your school administrator provide you with a sense of emotional security and well-being?	1	2	3
8. Do you feel your competence and skills are recognized by your school administrator?	1	2	3
9. Do you feel your school administrator does not share your interests and concerns?	1	2	3
10. Do you feel your school administrator can really rely on you for his or her well-being?	1	2	3
11. Is the school administrator a trustworthy person you could turn to for advice if you were having a problem?	1	2	3
12. Do you feel you lack emotional closeness with your school administrator?	1	2	3

Social Provisions Scale – Significant Relationship

As you answer questions on this page, please think about someone you are close to outside of your work. If a question accurately describes your relationship with this person, mark “yes”. If the question does not describe your relationship, mark “no”. If this sometimes describes your relationship, mark “sometimes”.

What is this person’s relationship to you? (e.g. husband, sister, mother, friend, son)

_____

In reference to the person listed above…

	No	Sometimes	Yes
1. Can you depend on this individual to help you if you really need it?	1	2	3
2. Do you feel you cannot turn to this individual for guidance in times of stress?	1	2	3
3. Does this individual enjoy the same social activities that you do?	1	2	3
4. Do you feel personally responsible for the well-being of this individual?	1	2	3
5. Do you feel this individual does not respect your skills and abilities?	1	2	3
6. If something went wrong, do you feel that this individual would not come to your assistance?	1	2	3
7. Does your relationship with this individual provide you with a sense of emotional security and well-being?	1	2	3
8. Do you feel your competency and skills are recognized by this individual?	1	2	3
9. Do you feel this individual does not share your interests and concerns?	1	2	3
10. Do you feel this individual does not really rely on you for his or her well-being?	1	2	3
11. Could you turn to this individual for advice if you were having problems?	1	2	3
12. Do you feel you lack emotional closeness with this individual?	1	2	3

The Organizational Climate Description for Elementary Schools: OCDQ-RE

Directions: The following are statements about the place where you teach. Please indicate the extent to which each statement characterizes your school by circling the appropriate response.

	Rarely Occurs	Sometimes Occurs	Often Occurs	Very Frequently Occurs
1. The teachers accomplish their work with vim, vigor, and pleasure.	1	2	3	4
2. Teachers' closest friends are other faculty members at this school.	1	2	3	4
3. Staff meetings are useless.	1	2	3	4
4. The school administrator goes out of his or her way to help teachers.	1	2	3	4
5. The school administrator rules with an iron fist.	1	2	3	4
6. Teachers leave school immediately after school is over.	1	2	3	4
7. Teachers invite other staff members to visit them at home.	1	2	3	4
8. There is a minority group of teachers who always oppose the majority.	1	2	3	4
9. The school administrator uses constructive criticism.	1	2	3	4
10. The school administrator checks the sign-in sheet every morning.	1	2	3	4
11. Routine duties interfere with the job of teaching.	1	2	3	4
12. Most of the teachers here accept the faults of their colleagues.	1	2	3	4
13. Teachers know the family background of other staff members.	1	2	3	4
14. Teachers exert group pressure on nonconforming staff members.	1	2	3	4
15. The school administrator explains his or her reasons for criticism to teachers.	1	2	3	4
16. The school administrator listens to and accepts teachers' suggestions.	1	2	3	4
17. The school administrator schedules the work for the teachers.	1	2	3	4
18. Teachers have too many committee requirements.	1	2	3	4
19. Teachers help and support each other.	1	2	3	4
20. Teachers have fun socializing together during school time.	1	2	3	4
21. Teachers ramble when they talk at staff meetings.	1	2	3	4
22. The school administrator looks out for the personal welfare of teachers.	1	2	3	4

23. The school administrator treats teachers as equals.	1	2	3	4
24. The school administrator corrects teachers' mistakes.	1	2	3	4
25. Administrative paperwork is burdensome at this school.	1	2	3	4
26. Teachers are proud of their school.	1	2	3	4
27. Teachers have parties for each other.	1	2	3	4
28. The school administrator compliments teachers.	1	2	3	4
29. The school administrator is easy to understand.	1	2	3	4
30. The school administrator closely checks classroom (teacher) activities.	1	2	3	4
31. Clerical support reduces teachers' paperwork.	1	2	3	4
32. New teachers are readily accepted by colleagues.	1	2	3	4
33. Teachers socialize with each other on a regular basis.	1	2	3	4
34. The school administrator supervises teachers closely.	1	2	3	4
35. The school administrator checks lesson plans.	1	2	3	4
36. Teachers are burdened with busywork.	1	2	3	4
37. Teachers socialize together in small, select groups.	1	2	3	4
38. Teachers provide strong social support for colleagues.	1	2	3	4
39. The school administrator is autocratic.	1	2	3	4
40. Teachers respect the professional competence of their colleagues.	1	2	3	4
41. The school administrator monitors everything teachers do.	1	2	3	4
42. The school administrator goes out of his or her way to show appreciation to teachers.	1	2	3	4

REFERENCES

Abrams, L. M., Pedulla, J. J., & Madaus, G. F. (2003). Views from the classroom: Teachers' opinions of statewide testing programs. *Theory into Practice, 42,* 18-29.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders (4th ed. text revision).* Washington, DC: Author.

Antonucci, T. C., & Israel, B. A. (1986). Veridicality of social support: A comparison of principal and network members' responses. *Journal of Consulting and Clinical Psychology, 54,* 432-437. doi: 10.1037/0022-006X.54.4.432

Bagby, R. M., Joffe, R. T., Parker, J. D. A., Kalemba, V., & Harkness, K. L. (1995). Major depression and the five-factor model of personality. *Journal of Personality Disorders, 9,* 224-234.

Bienvenu, O. J., Samuels, J. F., Costa, P. T., Reti, I. M., Eaton, W. W. & Nestadt, G. (2004). Anxiety and depressive disorders and the five-factor model of personality: A higher- and lower-order personality trait investigation in a community sample. *Depression and Anxiety, 20,* 92-97. doi: 10.1002/da.20026

Bolger, N., & Eckenrode, J. (1991). Social relationships, personality, and anxiety during a major stressful event. *Journal of Personality and Social Psychology, 61,* 440-449. doi: 10.1037/0022-3514.61.3.440

Bowling, N. A., Beehr, T. A., & Swader, W. M. (2005). Giving and receiving social support at work: The roles of personality and reciprocity. *Journal of Vocational Behavior, 67,* 476-489. doi: 10.1016/j.jvb.2004.08.004

Brouwers, A., Evers, W. J. G., & Tomic, W. (2001). Self-efficacy in eliciting social support and burnout among secondary-school teachers. *Journal of Applied Psychology, 31,* 1474-1491. doi: 10.1111/j.1559-1816.2001.tb02683.x

Buyse, E., Verschueren, K., Verachtert, P., & Van Damme, J. (2009). Predicting school adjustment in early elementary school: Impact of teacher-child relationship quality and relational classroom climate. *The Elementary School Journal, 110,* 119-141. doi: 10.1086/605768

Chien, L. L., Ko, H. C., & Wu, J. Y. W. (2007). The five-factor model of personality and depressive symptoms: One-year follow-up. *Personality and Individual Differences, 43,* 1013-1023. doi: 10.1016/j.paid.2007.02.022

Child Care Aware of America (2013). *We can do better: Child care aware of America's ranking of state child care center regulations and oversight: 2013 update.* Retrieved September 7, 2013, from http://www.naccrra.org/

Clara, I. P., Cox, B. J., Enns, M. W., Murray, L. T., & Torgrudc, L. J. (2003). Confirmatory factor analysis of the multidimensional scale of perceived social support in clinically distressed and student samples. *Journal of Personality Assessment, 81,* 265-270. doi: 10.1207/S15327752JPA8103_09

Cronkite, R. C., Moos, R. H., Twohey, J., Cohen, C., & Swindle, R. Jr. (1998). Life circumstances and personal resources as predictors of the ten-year course of

depression. *American Journal of Community Psychology, 26,* 255-280. doi: 10.1023/A:1022180603266

Curby, T. W., Brock, L. L., & Hamre, B. K. (2013). Teachers' emotional support consistency predicts children's achievement gains and social skills. *Early Education and Development, 24,* 292-309. doi: 10.1080/10409289.2012.665760

Cutrona, C.E. & Russell, D. W. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones and D. Perlman (Eds.), *Advances in personal relationships* (Vol. 1, pp. 37-67). Greenwich, CT: JAI Press.

De Fruyt, F., De Wiele, L. V., & Van Heeringen, C. (2000). Cloninger's psychobiological model of temperament and character and the five-factor model of personality. *Personality and Individual Differences, 29,* 441-452. doi: 10.1016/S0191-8869(99)00204-4

De Schipper, E. J., Riksen-Walraven, J. M., Geurts, S. A. E., & De Weerth, C. (2009). Cortisol levels of caregivers in child care centers as related to the quality of their caregiving. *Early Childhood Research Quarterly, 24,* 55-63. doi: 10.1016/j.ecresq.2008.10.004

Dormann, C., & Zapf, D. (1999). Social support, social stressors at work, and depressive symptoms: Testing for main and moderating effects with structural equations in a three-wave longitudinal study. *Journal of Applied Psychology, 84,* 874-884. doi: 10.1037/0021-9010.84.6.874

Dwight, S. A., Cummings, K. M., & Glenar, J. L. (1998). Comparison of criterion-related validity coefficients for the Mini-Markers and Goldberg's markers of the big five

personality factors. *Journal of Personality Assessment, 70,* 541-550. doi: 10.1207/s15327752jpa7003_11

Evans, G. D., Bryant, N. E., Owens, J. S., & Koukos, K. (2004). Ethnic differences in burnout, coping, and intervention acceptability among childcare professionals. *Child and Youth Care Forum, 33,* 349-371. doi: 10.1023/B:CCAR. 0000043040.54270.dd

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social behavioral, and biomedical sciences. *Behavior Research Methods, 39,* 175-191. doi: 10.3758/BF03193146

Finch, J. F., & Graziano, W. G. (2001). Predicting depression from temperament, personality, and patterns of social relations. *Journal of Personality, 69,* 27-55. doi: 10.1111/1467-6494.00135

Franco, C., Manas, I., Cangas, A. J., Moreno, E., & Gallego, J. (2010). Reducing teachers' psychological distress through a mindfulness training program. *The Spanish Journal of Psychology, 13,* 655-666.

Gladstone, G. L., Parker, G. B., Malhi, G. S., & Wilhelm, K. A. (2007). Feeling unsupported? An investigation of depressed patients' perceptions. *Journal of Affective Disorders, 103,* 147-154. doi: 10.1016/j.jad.2007.01.019

Gold, E., Smith, A., Hopper, I., Herne, D., Tansey, G. & Hulland, C. (2010). Mindfulness-based stress reduction (MBSR) for primary school teachers. *Journal of Child and Family Studies, 19,* 184-189. doi: 10.1007/s10826-009-9344-0

Goodwin, R. D., & Friedman, H. S. (2006). Health status and the five-factor personality traits in a nationally representative sample. *Journal of Health Psychology, 11,* 643-654. doi: 10.1177/1359105306066610

Greenglass, E. R., Fiksenbaum, L., & Burke, R. J. (1994). The relationship between social support and burnout over time in teachers. *Journal of Social Behavior and Personality, 9,* 219-230.

Greenhouse, S. (2011, October 15). Ohio wages fierce fight on collective bargaining. *The New York Times.* Retrieved from http://www.nytimes.com

Hamama, L., Ronen, T., Shachar, K., & Rosenbaum, M. (2013). Links between stress, positive and negative affect, and life satisfaction among teachers in special education schools. *Journal of Happiness Studies, 14,* 731-751. doi: 10.1007/ s10902-012-9352-4

Hamre, B. K., & Pianta, R. C. (2004). Self-reported depression in nonfamilial caregivers: Prevalence and associations with caregiver behavior in child-care settings. *Early Childhood Research Quarterly, 19,* 297-318. doi: 10.1016/j.ecresq.2004.04.006

Hettema, J. M., Neale, M. C., Myers, J. M., Prescott, C. A., & Kendler, K. S. (2006). A population-based twin study of the relationship between neuroticism and internalizing disorders. *American Journal of Psychiatry, 163,* 857-864. doi: 10.1176/appi.ajp.163.5.857

Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and meditational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27, 87-96.* doi: 10.1093/jpepsy/27.1.87

Hoth, K. F., Christensen, A. J., Ehlers, S. L., Raichle, K. A., & Lawton, W. J. (2007). A longitudinal examination of social support, agreeableness and depressive symptoms in chronic kidney disease. *Journal of Behavioral Medicine, 30,* 69-76. doi: 10.1007/s10865-006-9083-2

Hoy, W. K., Smith, P. A., & Sweetland, S. R. (2002). The development of the organizational climate index for high schools: Its measure and relationship to faculty trust. *High School Journal, 86,* 38-49. doi: 10.1353/hsj.2002.0023

Hoy, W. K., & Tarter, C. J. (1997). *The road to open and healthy schools: A handbook for change* (Elementary and Middle School ed.). Thousand Oaks, CA: Corwin Press, Inc.

Hoy, W. K., Tarter, C. J., & Bliss, J. R. (1990). Organizational climate, school health, and effectiveness: A comparative analysis. *Educational Administration Quarterly, 26,* 260-279.

Hoy, W. K., Tarter, C. J., & Kottkamp, R. B. (1991). *Open schools/healthy schools: Measuring organizational climate.* Newbury Park, CA: Sage.

Jurado, D., Gurpegui, M., Moreno, O., Fernandez, M. C., Luna, J. D., & Galvez, R. (2005). Association of personality and work conditions with depressive symptoms. *European Psychiatry, 20,* 213-222. doi: 10.1016/j.eurpsy.2004.12.009

Jurado, D., Gurpegui, M., Moreno, O., & Luna, J. D. (1998). School setting and teaching experience as risk factors for depressive symptoms in teachers. *European Psychiatry, 13,* 78-82. doi: 10.1016/S0924-9338(98)80022-9

Kendler, K. S., & Myer, J. (2010). The genetic and environmental relationship between major depression and the five-factor model of personality. *Psychological Medicine, 40,* 801-806. doi: 10.1017/S0033291709991140

La Paro, K. M., Hamre, B. K., Locasale-Crouch, J., Pianta, R. C., Bryant, D., Early, D., …Burchinal, M. (2009). Quality in kindergarten classrooms: Observational evidence for the need to increase children's learning opportunities in early education classrooms. *Early Education and Development, 20,* 657-692. doi: 10.1080/10409280802541965

Maslach, C., & Jackson, S. E. (1984). Burnout in organizational settings. *Applied Social Psychology, 5,* 133-153.

McCrae, R. R., & Costa, P. T., Jr. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 139-153). New York: Guilford.

McCrae, R. R., & Costa, P. T., Jr., Ostendorf, F., Angeleitner, A., Hrebickova, M., Avia, M. D., …Smith, P. B. (2000). Nature over nurture: Temperament, personality, and lifespan development. *Journal of Personality and Social Psychology, 78,* 173-186. doi: 10.1037/0022-3514.78.1.173

McCrae, R. R., Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology, 88,* 547-561. doi: 10.1037/0022-3514.88.3.547

McDowell, T. L., & Serovich, J. M. (2007). The effects of perceived and actual social support on the mental health of HIV-positive persons. *AIDS Care, 19,* 1223-1229. doi: 10.1080/09540120701402830

McKnight, J. D., & Glass, D. C. (1995). Perceptions of control, burnout, and depressive symptomatology: A replication and extension. *Journal of Consulting and Clinical Psychology, 63,* 490-494. doi: 10.1037/0022-006X.63.3.490

McLaughlin, J. (2010). *Teachers' depression symptoms: Effects of personality and school environment* (Master's thesis). Available from ProQuest Dissertations and Theses database. (Publication No. 1483809).

Merritt, E. G., Wanless, S. B., Rimm-Kaufman, S. E., Cameron, C., & Peugh, J. L. (2012). The contribution of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychology Review, 41,* 141-159.

Moreno-Abril, O., Luna-del-Castillo, J. D., Fernandez-Molina, C., Jurado, D., Gurpegui, M., Lardelli-Claret, P., & Galvez-Vargas, R. (2007). Factors associated with psychiatric morbidity in Spanish schoolteachers. *Occupational Medicine, 57,* 194-202. doi: 10.1093/ occmed/kqm013

Mulvenon, S. W., Stegman, C. E., & Ritter, G. (2005). Test anxiety: A multifaceted study on the perceptions of teachers, principals, counselors, students, and parents. *International Journal of Testing, 5,* 37-61. doi: 10.1207/s15327574ijt0501_4

National Association for the Education of Young Children (n.d.). *About NAEYC.* Retrieved April 25, 2011, from http://www.naeyc.org/content/about-naeyc

National Center for Education Statistics (2011). *Digest of education statistics: 2011.* Retrieved September 1, 2013, from http://nces.ed.gov/programs/digest/

Pakarinen, E., Kiuru, N., Lerkkanen, M., Poikkeus, A., Siekkinen, M., & Nurmi, J. (2010). Classroom organization and teacher stress predict learning motivation in kindergarten children. *European Journal of Psychology of Education, 25,* 281-300. doi: 10.1007/s10212-010-0025-6

Prenda, K. M., & Lachman, M. E. (2001). Planning for the future: A life management strategy for increasing control and life satisfaction in adulthood. *Psychology and Aging, 16,* 206-216. doi: 10.1037//0882-7974.16.2.206

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385-401. doi: 10.1177/014662167700100306

Rosellini, A. J., & Brown, T. A. (2011). The NEO Five-Factor Inventory: Latent structure and relationships with dimensions of anxiety and depressive disorders in a large clinical sample. *Assessment, 18,* 27-38. doi: 10.1177/1073191110382848

Ruggiero, J. (2005). Health, work variables, and job satisfaction among nurses. *Journal of Nursing Administration, 35,* 254-263.

Santor, D. A., Zuroff, D. C., Ramsay, J. O., Cervantes, P., & Palacios, J. (1995). Examining scale discriminability in the BDI and CES-D as a function of depression severity. *Psychological Assessment, 7,* 131-139. doi: 10.1037/1040-3590.7.2.131

Saucier, G. (1994). Mini-markers: A brief version of Goldberg's unipolar big-five markers. *Journal of Personality Assessment, 63,* 506-516. doi: 10.1207/s15327752jpa6303_8

Schernhammer, E. S., & Colditz, G. A. (2004). Suicide rates among physicians: A quantitative and gender assessment (meta-analysis). *American Journal of Psychiatry, 161,* 2295-2302. doi: 10.1176/appi.ajp.161.12.2295

Schmitz, N., Kugler, J., & Rollnik, J. (2003). On the relation between neuroticism, self-esteem, and depression: Results from the National Comorbidity Survey. *Comprehensive Psychiatry, 44,* 169-176. doi: 10.1016/S0010-440X(03)00008-7

Schonfeld, I. S. (1990). Psychological distress in a sample of teachers. *The Journal of Psychology, 124*, 321-338.

Schonfeld, I. S. (2001). Stress in 1st-year women teachers: The context of social support and coping. *Genetic, Social, and General Psychology Monographs, 127,* 133-168.

Siebert, D. C. (2004). Depression in North Carolina social workers: Implications for practice and research. *Social Work Research, 28,* 30-40.

Smith, J. M., & Kovacs, P. E. (2011). The impact of standards-based reform on teachers: The case of 'no child left behind.' *Teachers and Teaching: Theory and Practice, 17,* 201-225. doi: 10.1080/13540602.2011.539802

Steinhardt, M. A., Jaggars, S. E. S., Faulk, K. E., & Gloria, C. T. (2011). Chronic work stress and depressive symptoms: Assessing the mediating role of teacher burnout. *Stress and Health, 27,* 420-429. doi: 10.1002/smi.1394

Sweetland, S. R., & Hoy, W. K. (2000). School characteristics and educational outcomes: Toward an organizational model of student achievement in middle schools. *Educational Administration Quarterly, 36,* 703-729.

Swindle, R. W. Jr., Cronkite, R. C., & Moos, R. H. (1989). Life stressors, social resources, coping, and the 4-year course of unipolar depression. *Journal of Abnormal Psychology, 98,* 468-477. doi: 10.1037/0021-843X.98.4.468

United States Department of Labor (2012). *Bureau of Labor Statistics.* Retrieved September 8, 2013 from http://www.bls.gov

U.S. Department of Education (n.d.). *No child left behind.* Retrieved September 2, 2013, from http://www.ed.gov

Van Horn, J. E., Schaufeli, W. B., Greenglass, E. R., & Burke, R. J. (1997). A Canadian-Dutch comparison of teachers' burnout. *Psychological Reports, 81,* 371-382. doi: 10.2466/PR0.81.6.371-382

Vearing, A. & Mak, A. S. (2007). Big five personality and effort-reward imbalance factors in employees' depressive symptoms. *Personality and Individual Differences, 43,* 1744-1755. doi: 10.1016/j.paid.2007.05.011

Veenstra, A. (2010). *Do coping and perceived social support influence depression in teachers?* (Master's thesis). Available from ProQuest Dissertations and Theses database. (Publication No. 1483817).

Welsh, D. (2009). Predictors of depressive symptoms in female medical-surgical hospital nurses. *Issues in Mental Health Nursing, 30,* 320-326. doi: 10.1080/01612840902754537

Westman, M., & Etzion, D. (1999). The crossover of strain from school principals to teachers and vice versa. *Journal of Occupational Health Psychology, 4,* 269-278. doi: 10.1037/1076-8998.4.3.269

Wetter, E. K., & Hankin, B. L. (2009). Mediational pathways through which positive and negative emotionality contribute to anhedonic symptoms of depression: A prospective study of adolescents. *Journal of Abnormal Child Psychology, 37,* 507-520.

ABSTRACT

DEPRESSION SYMPTOMS IN EARLY CHILDHOOD TEACHERS: DO PERSONALITY, SOCIAL SUPPORT, AND SCHOOL CLIMATE PLAY A ROLE?

by

JESSICA MCLAUGHLIN

December 2013

Advisor: Dr. Rita J. Casey

Major: Psychology

Degree: Doctor of Philosophy

Depression among early childhood teachers has received little attention within the United States. For the present study, early childhood teachers were asked to participate in an online survey to investigate the rate of high depression symptoms among teachers, and whether personality, social support, and school climate are related to teachers' depression symptoms. Results showed that 32% of early childhood teachers in the sample were high in depression symptoms, which is significantly higher than rates of depression in the general population. Lower levels of neuroticism and higher levels of extroversion were related to fewer depression symptoms. Perceived social support from an administrator and other teachers' openness were also related to fewer depression symptoms in early childhood teachers. The implications of these findings are important, such as effects teacher depression could have on teaching quality and students' academic and psychosocial competence. Intervention options are also suggested, especially given the amount of pressure and scrutiny currently being placed on teachers in the United States.

AUTOBIOGRAPHICAL STATEMENT

Jessica McLaughlin lives in Lebanon, Ohio with her husband, dog, and two cats. She has loved the subject of psychology since she was in grade school, which led her to take as many psychology classes as possible as soon as she was accepted into undergraduate school at Grinnell College. After receiving a Bachelor of Arts degree in 2007, she decided to pursue a PhD in psychology at Wayne State University. Currently, Jessica loves to share her passion with her students as an adjunct faculty member at Sinclair Community College. She is excited to graduate and further her career as a professor. When she is not doing activities related to school, Jessica enjoys playing board games with her friends, spending time with her family, and reading novels.