The zones of regulation in schools

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THE ZONES OF REGULATION IN SCHOOLS

An Abstract of a Thesis
Submitted
in Partial Fulfillment
of the Requirements for the Degree
Education Specialist

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University of Northern Iowa
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ABSTRACT

Emotion regulation is a concept that has existed within the literature for decades, but the presence of emotion regulation programs in schools is a relatively new concept in research (Durlak et al., 2011). Research suggests that emotional regulation skills are related to improved peer relationships and academic success (Denham & Brown, 2010; Durlak et al., 2011). Students who exhibited well-adjusted, or adaptive, emotion regulation had better peer relationships and were more productive and accurate when completing academic tasks (Denham & Brown, 2010; Dvir et al., 2014; Kim & Cicchetti, 2010; Kim-Spoon et al., 2013; Lereya et al., 2015). For this reason, many schools have implemented programs designed to teach students adaptive emotion regulation strategies (Dingle et al., 2016; Hammond et al., 2009; Houck et al., 2015, 2016; 2018; Metz et al., 2013; Westhues et al., 2009).

The purpose of this study is to add to the limited research of the emotion regulation program, The Zones of Regulation. The current study will examine The Zones of Regulation as implemented within a Midwestern school, by comparing fidelity of implementation of the program and the number of student office referrals across middle school classrooms. Data was obtained from a small Midwestern, rural school district. Data included number of office referrals for each grade level and fidelity implementation self-reports completed by the teachers at the school. The data was analyzed using two-way ANOVA. Results from the two-way ANOVA indicated that grade level and grade level fidelity rating did not have an effect on office discipline referrals.
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<table>
<thead>
<tr>
<th>Date</th>
<th>Dr. Nicole Skaar, Chair, Thesis Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Dr. Kerri Clopton, Thesis Committee Member</td>
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<td>Dr. Brandy Smith, Thesis Committee Member</td>
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<td>Date</td>
<td>Dr. Jennifer Waldran, Dean, Graduate College</td>
</tr>
</tbody>
</table>
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Emotion Regulation and Mental Health</td>
<td>3</td>
</tr>
<tr>
<td>Emotion Regulation In Schools</td>
<td>6</td>
</tr>
<tr>
<td>Academic Success</td>
<td>6</td>
</tr>
<tr>
<td>Peer Relationships</td>
<td>8</td>
</tr>
<tr>
<td>Emotion Regulation Programs</td>
<td>9</td>
</tr>
<tr>
<td>The Zones of Regulation</td>
<td>10</td>
</tr>
<tr>
<td>Tuned In</td>
<td>11</td>
</tr>
<tr>
<td>BREATHE Program</td>
<td>12</td>
</tr>
<tr>
<td>PBIS</td>
<td>12</td>
</tr>
<tr>
<td>RULER</td>
<td>13</td>
</tr>
<tr>
<td>Limitations of Current Research</td>
<td>13</td>
</tr>
<tr>
<td>Statement of Purpose</td>
<td>15</td>
</tr>
<tr>
<td>Methods</td>
<td>16</td>
</tr>
<tr>
<td>Participants</td>
<td>16</td>
</tr>
<tr>
<td>Procedures</td>
<td>17</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>17</td>
</tr>
<tr>
<td>Results</td>
<td>18</td>
</tr>
<tr>
<td>Supplemental Analysis</td>
<td>19</td>
</tr>
<tr>
<td>Discussion</td>
<td>22</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>29</td>
</tr>
</tbody>
</table>
LIST OF TABLES

PAGE

Table 1 Mean Fidelity Score and Office Discipline Referrals Per Grade........................... 19
Table 2 Percentage of Fidelity Scores in Classrooms for Each Grade Level ................... 21
Table 3 Descriptive Statistics.......................................................................................... 22
Introduction

Several definitions of emotions and emotion regulation have been proposed as research and knowledge on the topics have increased. Cole et al. (2004) defined emotion:

Emotions are appraisal-action readiness stances, a fluid and complex progression of orienting toward the ongoing stream of experience. Emotions are moving targets that are usually unseen (and unfelt). Emotions must be inferred from evidence of the individual’s relation to surrounding events (Cole et al., 2004, p. 320).

Emotions are reactions based on an individual’s interactions within their environment. Emotions and subsequent behaviors that develop, especially in children, are a product of their surroundings (Cole et al., 2009; King & Mrug, 2018). This is an important idea when considering emotion regulation and the factors that contribute to emotion regulation skills (Cole et al., 2009; King & Mrug, 2018). Cole et al. (2004) used the word ‘stance’ to, “imply, as others have, that emotions involve being poised, oriented, ready, or inclined toward a course of action. The term ‘stance’ connotes that the individual is evaluating a situation (appraising) and inclining toward a particular class of actions (action readiness)” (p. 320). Emotion regulation is considered a separate construct from emotions, though past research has considered emotion and emotion regulation to be one construct. It is important to define both terms separately for clarity and distinction (Stansbury & Gunnar, 1994). Additionally, Cole et al. (2009) defined emotion regulation as “changes associated with activated emotions. These include changes in the emotion
itself (e.g., changes in intensity, duration) or in other psychological processes (e.g., memory, social interaction)” (p. 320).

Opposing definitions to Cole’s work came from Eisenberg and Spinrad (1994) who pointed out flaws in the development of Cole’s definition of emotion regulation. While Eisenberg and Spinrad agreed that changes in emotion (intensity and duration) and psychological processes were a part of emotion regulation, they believed the definition was too broad and therefore ineffective. Eisenberg and Spinrad constructed a variable definition of emotion regulation that states:

Emotion regulation is a process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavior concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals (Eisenberg & Spinrad, 1994 p. 338).

It is important to consider elements of attention, behavior, and motivation as aspects of emotion regulation when examining students and their interactions with peers and schoolwork. Emotion regulation skills are one within the set of social and emotional learning (SEL) skills. For nearly two decades, the Collaborative for Academic and Social Emotional Learning (CASEL) has promoted SEL skills within schools (Schonert-Reichl et al., 2017). SEL skills are defined as skills, and attitudes necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others,
establish and maintain positive relationships, and make responsible decisions (Weissberg et al., 2015). CASEL’s work and the work of other researchers have elevated the idea of teaching SEL skills in K-12 schools (Weissberg et al., 2015). Social and emotional learning, and emotion regulation specifically, have an impact on successful social skills demonstration and goal achievement and are skills that students use daily in their homes and at school (King & Mrug, 2018; Kwon et al., 2017; Kurki et al., 2014; Lafavor, 2018).

**Emotion Regulation and Mental Health**

Learning emotion regulation strategies can contribute to improved mental health, which can contribute to additional adaptive emotion regulation skill development (Feng et al., 2008; Kim & Cicchetti, 2010). Further, students’ use and development of emotion regulation strategies can be impacted by the student’s mental health (Feng et al., 2008). Poor mental health can sometimes inhibit adaptive emotion regulation skills from being used (Feng et al., 2008; Kelada et al., 2018). Maladaptive emotion regulation strategies can result in a decline in mental health, which can lead to additional emotion regulation problems as well as additional mental health issues (Kim & Cicchetti, 2010). A misconception about individuals with mental health concerns is that they do not have any emotion regulation abilities. These individuals typically do possess regulation abilities; however, some researchers consider these abilities to be maladaptive (Feng et al., 2008). According to research from Kelada et al., (2018), people with mental health concerns have adopted or learned maladaptive emotion regulation strategies which do not meet their mental health needs.
Research has focused on the relationship between an individual’s mental health and their emotion regulation skills (Feng, et al., 2008; Fussner et al., 2016; Hernández et al., 2017; Kelada et al., 2018; Kim & Cicchetti, 2010; Meagher et al., 2009; C. Wang et al., 2018; Woodward, 2017). Kim and Cicchetti (2010) explored the direct relationship between children’s mental health and their emotion regulation. Their research involved interviews with children ages six to twelve at summer camp over a two-year period. Specifically, the researchers examined the difference in emotion regulation skills of children who had been maltreated and those who had not. They found that when compared to peers who had not been maltreated, maltreated children had higher levels of emotion dysregulation. The researchers found that maltreatment was associated with more externalization of symptoms (e.g., aggressive, or delinquent behaviors) which correlated to lower peer approval. Lower peer approval subsequently resulted in a continued externalization of symptoms. The externalizing of symptoms led to more mental health issues. Additionally, Fussner et al., (2016) found a relationship between poor emotion regulation skills and peer rejection, which ultimately lead to depressive symptoms. Kim and Cicchetti (2010) hypothesized this cycle allowed the children’s mental health concerns to persist. Meagher et al., (2009) presented a longitudinal study that showed a connection between social skills and emotion regulation skills. Some students were found to have deficits in both skill areas, which were measured when students were in early education, and similar skill deficits were found when the same students were measured again in middle school. These students were more likely to self-report depressive symptoms as they progressed into their adolescent years. Meagher et
al. (2009) suggested this is a result of maladaptive emotion regulation skills, and Woodward (2017) also suggested that when emotion regulation problems occur early in school, there is a correlational relationship with mental health concerns developing in adolescence.

Mental health concerns in adolescence may result in the use of maladaptive emotion regulation strategies such as internalizing behaviors and non-suicidal self-injury (NSSI). Students who exhibited poor emotion regulation strategies in early childhood were more likely to internalize problems as they progressed into middle childhood (C. Wang et al., 2018). The presence of adaptive emotion regulation strategies across all developmental stages, most notably in adolescence, is an indicator of fewer mental health concerns (Schweizer Parker et al., 2019). Adolescents who had maladaptive emotion regulation (in the form of NSSI), had more mental health concerns compared to students who had adaptive emotion regulation strategies (Kelada et al., 2018).

Providing programs that teach adaptive emotion regulation skills in schools can help students replace maladaptive strategies with adaptive strategies. Research has found that after learning adaptive emotion regulation strategies, adolescents stopped engaging in NSSI behavior and there was a reported improvement to their mental health, despite no changes in their family functioning (Kelada et al., 2018). Research suggests that mental health concerns in adolescents will decline when adaptive strategies are learned from emotional skills training (Schweizer et al., 2019). Students can learn to adopt positive strategies to regulate their emotions when these programs are implemented in schools.
**Emotion Regulation In Schools**

Working to improve children’s mental health, developing an understanding of home influences on children, and helping to improve socio-emotional awareness are important aspects of developing a well-rounded student (King & Mrug, 2018; Kurki et al., 2014; Kwon et al., 2017; Lafavor, 2018). The goal of most teachers is for their students to have academic success and positive school experiences (Moen et al., 2019).

**Academic Success**

Several researchers found that students who were in disadvantaged situations, such as being exposed to violence in home or not having a permanent residence, generally had lower academic scores than students who did not experience disadvantaged situations (Hernández et al., 2017; Kim & Cicchetti, 2010; King & Mrug, 2018; Kurki et al., 2014; Kwon et al., 2017; Lafavor, 2018). If students in disadvantaged situations had adaptive emotion regulation skills, their academic scores may be closer to the norm group (Kurki et al., 2014; Kwon et al., 2017; Lafavor, 2018).

In addition, Raver et al. (2007) discussed the impact positive emotions have on the facilitation of learning and effort on difficult tasks. Positive emotions are due in large part to emotion regulation skills (Raver et al., 2007). They found that students who employed adaptive emotion regulation strategies in academic situations, specifically when completing difficult tasks, were more likely to have academic success and report positive emotions (Raver et al., 2007). These results suggest that adaptive emotion regulation skills are important in the academic setting. When measuring academic
success in adolescents who were living in an emergency homeless shelter, Lafavor (2018) found that children who are homeless and have adaptive emotion regulation skills perform similarly in academics to children with a permanent residence, compared to children who are homeless and who do not have adaptive emotion regulation skills. Further, King and Mrug (2018) found that the impact of witnessing community violence on academic performance was mediated when the student possessed adaptive emotion regulation skills.

Panlilio et al. (2018) researched students ages four to six and found that maltreated students were more likely to have emotionally maladaptive skills. Reading and math scores for these maltreated students at age 10 were lower than students who were also maltreated but rated as having emotionally adaptive skills. The researchers use this information to advocate for better policies and interventions to support teaching emotion regulation skills within schools (Panlilio et al., 2018). In a slightly older sample of children in grades third through sixth, Kwon et al. (2018) found that students who performed better on the reading portion of a state-wide standardized test had better emotion regulation skills compared to those who demonstrated difficulties with reading skills. Not only did researchers find a positive correlation between adaptive emotion regulation and academic success, but they also found a correlation between emotion regulation skills and motivation (Kwon et al., 2017).

King and Mrug (2018) and Lafavor (2018) concluded that academic interventions alone were not enough to assist students who experienced home or community violence
with their academic performance. In addition to academic interventions, researchers suggested that emotion regulation programs be implemented as another tool to assist students. External factors contribute to how emotion regulation affects academic success, but experiences within the classroom also contribute to emotion regulation challenges for students as well.

Peer Relationships

Experiences within the classroom can be mediated by the presence of emotion regulation skills. Research has examined the connection between adaptive emotion regulation skills, and having positive emotion centered interactions such a peer relationships (Bell & Calkins, 2000). Students who were identified as displaying low emotion regulation skills, especially early in school experiences such as preschool and kindergarten, more frequently struggled with difficult classroom situations, such as interacting with several different people and figuring out expectations and goals for behavior and learning, compared to their peers who were rated high in emotion regulation skills (Bell & Calkins, 2000; Kurki et al., 2014). Students with high emotion regulation skills were more emotionally aware and able to avoid the difficult socio-emotional situations in the classroom, which were identified as making mistakes or being criticized, following or remembering rules, concentrating on a task, and working on a challenging task (Kurki et al., 2014). Further, Hernández et al., (2017) examined kindergarteners and found that students who had adaptive emotion regulation skills and externalized positive emotions were less likely to be described by teachers to have maladjustment issues. The demographics of the student sample was, 53% Hispanic, 34% White, 3% Asian, 2%
American Indian/Alaska Native, 2% Black, 1% other, 6% unknown. Additionally, students who had trouble externalizing positive emotions were more likely to be described by teachers to have externalizing problems, depressive symptoms, higher teacher-student conflict, and more difficulty interacting with peers in the classroom. Researchers addressed the potential for racial and gender bias in teacher ratings and noted that the statistical analysis indicated ratings did not differ between child gender or race (Hernández et al., 2017). Longitudinal research found that these relationships persist from grade to grade beyond kindergarten (Hernández et al., 2017; Meagher et al., 2009).

Emotion regulation skills are needed from the moment school begins for a student, and without adaptive strategies to deal with emotions, students will likely struggle when presented with situations requiring emotion regulation skills as they progress throughout their academic experience. By teaching emotion regulation skills to students in school, especially at an early age, teachers can give students skills that will allow them to be successful in navigating school and relationships within the school setting. Beginning in kindergarten, and progressing through the academic experience of a child, there is a relationship between emotion regulation and academic success (Denham & Brown, 2010; Durlak et al., 2011; Graziano et al., 2007; Ivcevic & Brackett, 2014). This suggests the importance of emotion regulation programs within schools.

**Emotion Regulation Programs**

Research suggests adaptive emotion regulation skills have an impact on mental health, academic success, peer interactions, and student-teacher relationships. (Hernández
et al., 2017; Kurki et al., 2014). Emotion regulation programs that range in target age and methods are being implemented in schools.

The Zones of Regulation

The Zones of Regulation is marketed as, “A framework designed to foster self-regulation and emotional control”. The Zones of Regulation is a framework for thinking and a treatment approach that is based on evidence in the fields of autism spectrum disorders, attention deficit disorders, and social-emotional theories. Research done involving The Zones of Regulation and emotion regulation outcomes in students have not provided evidence that supports The Zones of Regulation as an effective practice (Dunn, 2019; Hoffman, 2018). The Zones integrates systemizing theory, central coherence theory and cognitive behavior management (CBM), all of which are evidence-based practices (Kuypers, n.d.). Central coherence theory (CCT) focuses on social interactions, more specifically the inability to understand situations in context as these skills relate to autism spectrum conditions (Perner et al., 1989). More specifically, CCT is the idea that when a task, or social interaction requires a person to extract global meaning from many details, or to see the “big picture”, people with autism spectrum conditions would be at a major disadvantage, but when picking out extreme detail from surrounding masses of information was required, people with ASDs could be in a position to excel (Perner, et al., 1989). Systemizing theory is an extension of CCT, and focuses on social interactions and communication barriers often attributed to autism spectrum conditions (Baron-Cohen, 2016). More specifically, Baron-Cohen (2016) theorized that there are five “types” of brains depending on how an individual scores on an empathizing and
systemizing scale. It was also theorized that individuals who have a diagnosis of an autism spectrum condition will score higher on systemizing items rather than empathizing, indicating that their systemizing skills (such as math and science skills) are stronger than their empathy and social skills (Baron-Cohen, 2016). CBM is a broader concept of cognitive behavioral therapy and includes specific techniques that teach self-control and how behavior impacts academic and social interactions (Swaggart, 1998).

The Zones of Regulation program includes a weekly and meaningful class meeting where the class meets as a whole to discuss progress on previous lessons, a safe and confidential environment where students can feel safe to discuss their emotions, a consistent time for full participation so students know when to expect the specific instruction of Zones of Regulation, direct instruction of a curriculum provided through the Zones of Regulation lessons using the intervention manual, instruction on strategies to get back to green, and having the Zones posted in classroom (Kuypers, n.d.).

**Tuned In**

Dingle et al. (2016) reported data from the Australian Psychological Society, which found that the most common emotion regulation strategy for 18-24-year-olds was listening to music of their own choosing based on their mood. The results from this study prompted the research team to create an emotion regulation program based on listening to music of one’s own choosing as a way of regulating emotions within the school setting. As part of Tuned In, which is a program designed for students aged 14-25, students were given homework assignments to bring back songs to their group sessions that were of varying tempos and moods. Throughout the 8 sessions, the facilitator helped students
express their feelings through music. At the end of the program, both groups of students, who were ages 14 to 17, self-reported that they felt they had better emotion regulation skills (Dingle et al., 2016). Results also showed a moderate Cohen’s effect size value (d=.55) in students’ ability to name their own emotions increased from pre to post program.

**BREATHE Program**

Other researchers conducted school-based interventions for adolescents targeting adaptive emotion regulation skills (Houck et al., 2015; Houck et al., 2016; Houck et al., 2018; Metz et al., 2013). The BREATHE program is a mindfulness based emotion regulation program designed for use in a K-12 setting. The goals of the program include helping students understand their thoughts and feelings and how to implement mindfulness-based skills to manage emotions. This is done through group practice (Metz et al., 2013). Metz et al. (2013) found that implementing the *BREATHE* emotion regulation program with high school students resulted in significant increases in emotion regulation and emotional awareness and decreases in stress symptoms.

**PBIS**

Additional research found that school-wide emotion regulation skills improved over time after implementing a school-wide positive behavioral intervention and support (SWPBIS) program (Bradshaw et al., 2012). The purpose of SWPBIS is to establish a set of positive, school-wide expectations for student behavior, which are taught to everyone in the school and can be implemented in elementary, and secondary settings. SWPBIS
also aims to prevent disruptive behavior and enhance organizational climate by implementing a 3-tiered prevention framework, one of which is a universal tier composed of school-wide components of behavior instruction that are provided to all students (Bradshaw et al., 2012). Research found that when a SWPBIS was implemented, lower levels of disruptive behavior problems and concentration problems, and better emotion regulation and more prosocial behavior were displayed when compared to schools that did not have a SWPBIS program implemented (Bradshaw et al., 2012; Cook et al., 2015; Horner & Sugai, 2015).

**RULER**

Research suggests that classroom-level emotion regulation improved over time after implementing the RULER program. The RULER program is designed for use with students ranging from preK-12 and is a whole-school approach to social and emotional learning, which was developed at the Yale Center for Emotional Intelligence. RULER is grounded in the theory of emotional intelligence, which emphasizes the critical role of emotion regulation in healthy development (Hoffmann et al., 2020). Research found that when RULER was implemented in a secondary school setting, students experienced a higher level of teacher to student connections, higher degrees of warmth, and more student autonomy when compared to similar classrooms that did not implement the RULER program (Hoffmann et al., 2020; Rivers et al., 2012).

**Limitations of Current Research**

A growing body of research exists on a variety of emotion regulation programs. Although an increasing amount of research has been done on these types of interventions,
there is very limited research done on a popular program called The Zones of Regulation. One of the biggest criticisms of The Zones of Regulation, and something that the creators and publishers of The Zones of Regulation acknowledge, is that the program is not considered an evidence-based practice, but rather is a “Practice Based on Evidence” which means that The Zones of Regulation is based on researched theories on emotion regulation and learning emotion regulation, but the program itself has not been thoroughly researched. A search for The Zones of Regulation on PsychINFO yielded zero relevant results. Google Scholar yielded limited results; the main results were a Master’s thesis and doctoral dissertation which produced mixed results as to the effectiveness of Zones (Dunn, 2019; Hoffman, 2018). Dunn (2019) investigated the impact of The Zones of Regulation on the social-emotional (SEL) competence skills of second grade students in the general education classroom. Results from this study did not reveal any significant interactions, indicating the impact of the SEL lessons was inconsistent across conditions, poverty status, and individual teachers within groups. Hoffman (2018) examined what effect the implementation of the Zones of Regulation Curriculum would have on the number of conflicts in a third-grade classroom. The research showed no evidence of an increase or decrease in conflicts resulting from the implementation of the Zones of Regulation curriculum.

The Zones of Regulation website shares limited results of empirical studies investigating the program. An article on the site hypothesized that Preschool students who participate in the modified Zones curriculum will exhibit improved self-regulation skills when compared to peers who do not receive the curriculum (Kuypers, n.d.). The
results did not support Zones improving self-regulation skills in preschool students. The study included 46 students and used a modified version of The Zones of Regulation. To this point, there is no published research conducted using The Zones of Regulation unmodified.

**Statement of Purpose**

Emotion regulation is a concept that has existed within the literature for decades, (Thompson, 1994), but the presence of emotion regulation programs in schools is a relatively new concept in research (Houck et al., 2015, 2016, 2018; Metz et al., 2013). Research shows a connection between emotion regulation skills and peer relationships (Dvir et al., 2014; Kim & Cicchetti, 2010; Kim-Spoon et al., 2013; Lereya et al., 2015). Students who exhibited well-adjusted, or adaptive, emotion regulation had better peer relationships and were more productive and accurate when completing assignments, had more academic success, and exhibited fewer mental health concerns (Kim & Cicchetti, 2010; Kurki et al., 2014; Kwon et al., 2017; Lafavor, 2018; Raver et al., 2007; Schweizer et al., 2019). For this reason, many schools have implemented programs designed to teach students adaptive emotion regulation strategies (Dingle et al., 2016; Hammond et al., 2009; Houck et al., 2015, 2016, 2018; Metz et al., 2013). Past research has examined and provided evidence for the effectiveness of emotion regulation programs in schools (Dingle et al., 2016; Houck et al., 2015, 2016, 2018; Metz et al., 2013). Limited research has been conducted on the implementation of Zones in schools, and even then, the results of these studies are inconclusive. While there have been numerous research studies measuring the efficacy of classroom based SEL interventions
and their impact on student social and emotional functioning, to date there have been no studies investigating the efficacy of Zones of Regulation. Despite the lack of research, it is currently implemented throughout the United States. The current study will add to the limited body of research using *The Zones of Regulation* to improve emotion regulation skills in students. The following hypothesis will be studied as part of this project:

1. Grade levels who had higher levels of implementation fidelity of The Zones of Regulation program will have lower office referral rates than grade levels with lower levels of implementation fidelity of The Zones of Regulation program.

**Methods**

**Participants**

Data was obtained from a middle school in a small Midwestern rural school district. The middle school serves grades 5-8. There are 763 students enrolled in the middle school, 181 in 5th grade, 197 in 6th grade, 187 in 7th grade, and 198 in 8th grade. 91% of students are White, 14% of students are receiving special education services, and 26% are considered low SES. Integrity data was collected from all general education teachers in fifth through eighth grade. The district determined that integrity data was to be collected anonymously in an effort for teachers to be more truthful in their responses. Unfortunately, the school was unwilling to have some classrooms be part of a waitlist control condition; therefore, integrity data was collected to be used as a proxy for a control condition. Classrooms with lower fidelity scores would be considered not implementing the Zones program. There are nine teachers in fifth grade, ten teachers in sixth grade, six teachers in seventh grade, and twelve teachers in eighth grade.
Procedures

School administrators asked teachers to anonymously provide a self-report rating of their implementation fidelity on the nine elements of The Zones of Regulation (A Weekly and Meaningful Class Meeting, a Safe and Confidential Environment, a Consistent Time for Full Participation, a Safe, Quiet Space Away from Others, Modeling Expectations of Space and Tools, a Variety of Tools in Safe and Quiet Space, Direct Instruction of Curriculum, Provided and Encouraged Strategies to get back to green, and the Zones Posted in Classroom). The administrators wanted the teachers’ responses to be anonymous, so the teachers did not feel this process was evaluative. The self-report rating was based on a one to three rating, a one representing no implementation, a two representing partial implementation and a three representing full implementation. Office referral data was collected for the first year that The Zones of Regulation was implemented. Office discipline referrals (ODR) were given to students by the classroom teacher and students were sent to the office where the principal handled the referral. According to the student handbook, any behavior that goes against the student code of conduct is considered grounds for referral to the office. These behaviors include but are not limited to, bullying and harassment, improper use of electronic devices, and vandalism. The data collection was completed in the spring of 2019.

Data Analysis

A two-way ANOVA with post-hoc analysis was used to investigate if fidelity impacted classroom office referrals. In the current study the independent variables were grade level and the fidelity rating of the components of The Zones of Regulation. The
dependent variable in the current study was the number of office discipline referrals for each grade level.

**Results**

Analyses focused on teacher self-reported scores of implementation fidelity of the nine different components of The Zones of Regulation. Each teacher rated themselves on a scale of one to three, one being low fidelity and three being high fidelity. Due to fidelity ratings being collected anonymously, office referral data was obtained at a whole grade level to compare across grade levels. A grade level implementation fidelity score was calculated by adding the implementation scores for all components for each classroom in each grade level, providing a score that ranged from 0 to 27. A grade level implementation score was obtained by calculating a mean across the classrooms within each grade level, resulting in a grade level mean implementation fidelity score that ranged from 0 to 27.

The sixth-grade teachers (M = 2.078, SD = 0.360) had a higher mean fidelity rating across all elements than the fifth-grade teachers (M = 1.975, SD = 0.337), the seventh-grade teachers (M = 1.759, SD = 0.607), and the eighth-grade teachers (M = 1.805, SD = 0.441) (Table 1). A two-way analysis of variance (ANOVA) was conducted to compare the main effects of grade and implementation fidelity on the number of office discipline referrals. The main effect for grade level was not significant (F(1,3) = .873, p > .05). The main effect for implementation fidelity score was not significant (F(1,3) = .981, p > .05). Finally the interaction effect (grade x implementation fidelity) was not significant (F(2,3) = .635, p > .05). Therefore, it appears that neither the grade level nor
the level of fidelity with which The Zones of regulation was implemented has any significant effect on office discipline referrals.

Table 1

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mean Fidelity Score</th>
<th>Office Referrals</th>
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<tbody>
<tr>
<td>5</td>
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<td>42</td>
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<tr>
<td>6</td>
<td>18.70</td>
<td>41</td>
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<tr>
<td>7</td>
<td>15.83</td>
<td>28</td>
</tr>
<tr>
<td>8</td>
<td>16.25</td>
<td>44</td>
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Supplemental Analysis

A one-way ANOVA with post-hoc analysis was used to investigate if fidelity ratings were significant across grade levels. For this analysis, the independent variable was grade level, and the dependent variable was the fidelity score that ranged from 0-27 for each classroom. The mean fidelity score for 6th grade (M= 18.70, SD = 2.40) was higher than 5th (M = 17.78, SD = 4.79) 7th grade (M = 15.83, SD = 1.47) and 8th grade (M = 16.25, SD = 2.93) (Table 4). A class level implementation score was obtained by calculating the sum across the nine components, resulting in a class level implementation fidelity score that ranged from 0 to 27.

An analysis of classroom fidelity scores indicated that no classroom implemented the Zones of Regulation with perfect fidelity. Further, no component of Zones of Regulation was implemented with perfect fidelity across any grade level. The component of the program which consists of placing a poster or images of the Zones in the classroom was the component with highest fidelity across grade levels but was still not 100%
implemented across all classrooms. Two of the components with the lowest fidelity across grade levels were the Direct Curriculum Instruction and Providing a Variety of Tools in the safe and quiet space within the classroom. The self-report measures from teachers across grade levels indicated that less than half of all teachers in each grade level created a Safe Space for students to share their emotions with high fidelity. The component of the Daily Meeting was also implemented with low fidelity, which indicates that a majority teachers did not provide daily meetings as a part of the Zones of Regulation program. The main effect for grade level was not significant ($F(3,33) = 1.534$, $p > .05$). Therefore, it appears that fidelity did not vary significantly between grade levels.
Table 2

*Percentage of Fidelity Scores in Classrooms for Each Grade Level*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Implementation Level</th>
<th>Daily Meeting</th>
<th>Safe Environment</th>
<th>Time for Participation</th>
<th>Safe Quiet Space</th>
<th>Model Expectations</th>
<th>Variety of Tools</th>
<th>Direct Curriculum Instruction</th>
<th>Encourage Strategies</th>
<th>Zones Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th Full</td>
<td>22%</td>
<td>11%</td>
<td>44%</td>
<td>44%</td>
<td>22%</td>
<td>22%</td>
<td>22%</td>
<td>11%</td>
<td>89%</td>
<td></td>
</tr>
<tr>
<td>5th Partial</td>
<td>33%</td>
<td>56%</td>
<td>22%</td>
<td>22%</td>
<td>33%</td>
<td>44%</td>
<td>44%</td>
<td>44%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>5th None</td>
<td>44%</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
<td>44%</td>
<td>33%</td>
<td>33%</td>
<td>44%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>6th Full</td>
<td>30%</td>
<td>40%</td>
<td>70%</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>6th Partial</td>
<td>60%</td>
<td>50%</td>
<td>10%</td>
<td>10%</td>
<td>20%</td>
<td>50%</td>
<td>60%</td>
<td>50%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>6th None</td>
<td>10%</td>
<td>10%</td>
<td>20%</td>
<td>60%</td>
<td>60%</td>
<td>40%</td>
<td>20%</td>
<td>20%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>7th Full</td>
<td>43%</td>
<td>14%</td>
<td>86%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>71%</td>
<td></td>
</tr>
<tr>
<td>7th Partial</td>
<td>0%</td>
<td>57%</td>
<td>0%</td>
<td>29%</td>
<td>0%</td>
<td>29%</td>
<td>57%</td>
<td>57%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>7th None</td>
<td>57%</td>
<td>29%</td>
<td>14%</td>
<td>71%</td>
<td>100%</td>
<td>71%</td>
<td>43%</td>
<td>43%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>8th Full</td>
<td>33%</td>
<td>42%</td>
<td>67%</td>
<td>17%</td>
<td>0%</td>
<td>17%</td>
<td>8%</td>
<td>0%</td>
<td>42%</td>
<td></td>
</tr>
<tr>
<td>8th Partial</td>
<td>33%</td>
<td>42%</td>
<td>25%</td>
<td>25%</td>
<td>8%</td>
<td>33%</td>
<td>33%</td>
<td>67%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>8th None</td>
<td>33%</td>
<td>17%</td>
<td>8%</td>
<td>58%</td>
<td>92%</td>
<td>50%</td>
<td>56%</td>
<td>33%</td>
<td>50%</td>
<td></td>
</tr>
</tbody>
</table>
Table 3

**Descriptive Statistics**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>17.78</td>
<td>4.79</td>
<td>11.00</td>
<td>26.00</td>
</tr>
<tr>
<td>6</td>
<td>18.70</td>
<td>2.40</td>
<td>16.00</td>
<td>24.00</td>
</tr>
<tr>
<td>7</td>
<td>15.83</td>
<td>1.47</td>
<td>14.00</td>
<td>18.00</td>
</tr>
<tr>
<td>8</td>
<td>16.25</td>
<td>2.92</td>
<td>11.00</td>
<td>21.00</td>
</tr>
</tbody>
</table>

**Discussion**

The 9 elements of The Zones of Regulation were implemented in a 5-8 grade school. Fidelity scores were anonymously submitted via teacher self-rating, where the implementation fidelity ranged from low to high (0-3) across each grade level. Statistical analyses were conducted to determine if grade level or implementation fidelity had an impact on student office discipline referrals. Based on the findings presented here, neither implementation fidelity of The Zones of Regulation or grade level impacted the number of student office discipline referrals. This suggests that classroom teachers who implement The Zones of Regulation with increased fidelity may not give any fewer office discipline referrals than teachers who implement the program with less fidelity. A Supplemental analysis was conducted to evaluate classroom level fidelity. No class across grade levels had full implementation fidelity, and there was no individual component across grade levels that was implemented with perfect fidelity. Which presents additional questions regarding teacher training in Zones of Regulation, and teacher buy in for the intervention, such as, why the least intensive components, such as Posting the Zones in the Classroom, were not implemented with perfect fidelity? A limited number of teachers across grade levels implemented the Direct Instruction of the Zones of Regulation and Modeling of
expectations with high fidelity. Was this due to lack of time, or training, or teacher buy in? What training did the teachers receive when the school considered implementing Zones of Regulation within the classroom? Were external fidelity checks conducted as well to promote teacher efficacy and to provide staff support? Fidelity ratings for a Daily Meeting were, for most teachers, implemented with partial fidelity or no fidelity. Was this lack of fidelity due to required areas of instruction, or due to teachers not making time to consistent have daily meetings? Future research is needed to explore these questions and the impact implementation fidelity has on program effectiveness.

These findings are similar to findings in previous research. Previous research did not find that The Zones of Regulation had an impact on behavior, and the current research also did not find a connection between implementation of the Zones of Regulation and office discipline referral rates (Hoffman, 2018). Although there is a limited amount of research on The Zones of Regulation, most research that aimed to document the effectiveness of The Zones of Regulation has shown similar results. Research has examined the effect of using The Zones of Regulation program class wide on the number of conflicts in a classroom, and the researchers found no evidence of an increase or decrease in conflicts resulting from the implementation of the Zones of Regulation curriculum (Dunn, 2019). Research has also examined the effectiveness of The Zones on Regulation in helping students with social-emotional competence skills, again showing no significant effect (Hoffman, 2018).

This research extends the concerns surrounding The Zones of Regulation being an evidence-based practice, rather than what it is considered now, a practice based in
evidence. Research support for other emotion regulation programs is more promising, such as programs like RULER, Tuned In, and the BREATHE program (Dingle et al., 2016; Hoffmann et al., 2020; Houck et al., 2015, 2016, 2018; Metz et al., 2013; Rivers et al., 2012). Research suggests that some students do not learn adaptive emotion regulation skills at home (Dvir et al., 2014; Lafavor, 2018; Panlilio et al., 2018), and teaching adaptive emotion regulation skills at school can result in positive effects in relation to academics and peer relationships (King & Mrug, 2018; Lafavor, 2018; Panlilio et al., 2018; Raver et al., 2007). With programs such as RULER and Tuned In being evidence-based emotion regulation programs designed for implementation in schools, these and other evidence-based interventions are the programs educators should advocate for use within their schools. Research exists that shows programs such as Tuned In and RULER have a positive effect on students’ emotion regulation skills. (Hoffmann et al., 2020; Dingle et al., 2016; Rivers et al., 2012).

With more school districts employing a response to intervention system (RTI) and a multi-tiered system of support (MTSS) within their buildings, evidenced based interventions are necessary to support this work in the tiered systems to provide support for students (Keller-Margulis, 2012). Schools are using MTSS and RTI as part of their process to support students at all levels, and to qualify students for special education supports and services (O’Donnell, 2008), and high stakes decisions regarding student placement within Tier 1, Tier 2 and Tier 3 needs to be supported by evidence-based interventions (Keller-Margulis, 2012; O’Donnell, 2008). Often, emotion regulation programs are being used and researched at the Tier 1 level, and by using evidenced
interventions as part of the RTI process, schools can be more confident that appropriate instructional methods and decisions are being used to promote educational growth, rather than using interventions that have no research to support their effectiveness (Dingle et al., 2016; Hammond et al., 2009; Houck et al., 2015; Houck et al., 2016; Houck et al., 2018; Metz et al., 2013; Westhues et al., 2009). Programs such as RULER and Tuned In, which have empirical evidence supporting their effectiveness to increase students’ emotional health and emotion regulation skills, should be considered instead of programs without such evidence.

It is important to note that no classroom in this study implemented The Zones of Regulation with perfect fidelity. Although no classroom had perfect fidelity, a limitation of the current study is that implementation integrity data was all self-reported, and teachers may have rated themselves differently than an external rater using the implementation fidelity checklist provided as part of the program. Research has indicated that if fidelity is not high when implementing an intervention, whether due to lack of teacher training or lack of teacher buy in, one cannot be sure if the intervention was unsuccessful or if the lack of success was a result of poor implementation fidelity (O’Donnell, 2008). When an intervention is implemented with high fidelity, the intervention effectiveness will be higher than when an intervention is implemented with low fidelity (Wanless et al., 2014). One way to possibly promote high fidelity for intervention implementation is to use a fidelity checklist. Research also supports the use of fidelity checklists as an effort to promote high fidelity and increase confidence that any positive change in behavior was due to the intervention (Keller-Margulis, 2012). The Zones of Regulation Manual does include a
fidelity checklist that could be used to help support teachers of they choose to implement this program.

Teacher training could be a reason for the imperfect fidelity scores across grades. If teacher’s have not been trained to properly use and implement an intervention, it is illogical to assume that an intervention would be implemented with high fidelity. Teacher training and ongoing support for teachers are important pieces to help ensure high fidelity of intervention implementation (Wanless et al., 2014). Teacher training is part of the process to achieving teacher efficacy in intervention implementation. Teachers have reported that coaching and collaboration with colleagues allowed for a higher sense of efficacy when receiving training on a new intervention (Cantrell & Hughes, 2008). Teachers can achieve efficacy not only through the work they do with other teachers, but also by working with support personnel within the school (Cantrell & Hughes, 2008). Support personnel, such as school psychologists, work with teachers to promote student growth and success, but also teacher growth and success (NASP, 2010). School psychologists not only have the training to help teachers and schools develop effective intervention programs, but also how to maintain those programs through professional development opportunities and creating implementation checklists to promote high fidelity and teacher efficacy within the school (NASP, 2010). By providing teachers opportunities to collaborate with coaches and support personnel, schools can promote teacher efficacy, especially in the area of intervention implementation (Cantrell & Hughes, 2008; NASP, 2010).
This study focused on office discipline referrals, which may be considered an adult behavior. Measures that look at student responses on emotional health and emotion regulation skills may be a more appropriate measure for The Zones of Regulation for future research. Research surrounding other emotion regulation programs, such as RULER and Tuned In, have focused primarily on student responses and student outcomes to measure program effectiveness (Dingle et al., 2016; Hoffmann et al., 2020; Rivers et al., 2012). By collecting student data, those researchers were able to examine the direct impact of the program on students’ abilities, while the use of office discipline referrals made by adults in the school in the current research, could be more reflective of adult response to student’s rather than the impact The Zones of Regulation had on students’ behavior.

Some limitations merit comment. Due to the COVID-19 pandemic and subsequent closure of schools in the Spring of 2020, additional desired data was unable to be collected. The researcher planned to gather multiple years of data to further evaluate effectiveness of The Zones of Regulation, but when schools shut down in Spring 2020, this data stopped being collected. Due to school administration wanting to keep fidelity data anonymous, the researcher was unable to analyze data at the classroom level, which may have yielded different results. Additionally, the sample of participants were primarily Caucasian, and the sample consisted of one rural Midwest middle school.

Future research efforts are needed to evaluate the effectiveness of emotion regulation programs in schools, specifically The Zones of Regulation. It is likely that the mental health crisis being highlighted by the COVID-19 pandemic will require the
continued implementation of emotion regulation programs in schools (Lee, 2020; Radwan et al., 2020). Although the effects of the pandemic may not be fully understood currently, it presents unprecedented opportunities for scientific research in schools surrounding mental health and the effectiveness of emotion regulation programs as students return to learning and academic demands (Lee, 2020). With schools receiving additional funding from federal and state governments during the pandemic to support students, investments in evidence-based emotion regulation programs and SEL programs are important for schools to consider, given the academic and social impacts adaptive emotion regulation skills are shown to have with students (Denham & Brown, 2010; Durlak et al., 2011; Graziano et al., 2007; Ivcevic & Brackett, 2014). Schools need to invest in evidence-based emotion regulation programs and researched based comprehensive SEL programs over programs that lack research to support them, due to the positive results that adaptive emotion regulation skills can provide students, and due to the growing efforts to include SEL instruction within schools (Dingle et al., 2016; Durlak et al., 2011; Graziano et al., 2007; Metz et al., 2013).
REFERENCES


