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Reducing Levels of Maladaptive Perfectionism in Gifted and Talented Youth Through a Mindfulness Intervention

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UNIVERSITY OF NORTHERN COLORADO

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The Graduate School

REDUCING LEVELS OF MALADAPTIVE PERFECTIONISM
IN GIFTED AND TALENTED YOUTH THROUGH
A MINDFULNESS INTERVENTION

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

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College of Education and Behavioral Sciences
School Psychology

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This Dissertation by: Sophia Rebecca Olton-Weber

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ABSTRACT

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This study examined the impact of a mindfulness program on 42 middle school students who had been identified as Gifted and Talented. Participants completed a six-week intervention designed to teach mindfulness. Before starting the group, students completed the Child and Adolescent Perfectionism Scale (CAPS; Flett et al., 2016) which provides a measure of self (i.e., setting excessively high goals and standards for self) as well as socially-prescribed (i.e., perception that others are holding individual to unrealistic standards) perfectionism. Additionally, participants' use of mindfulness was measured. All measures were completed at pre-, post-intervention, and at follow up to determine whether the intervention decreased perfectionism and increased the practice of mindfulness. Three Bonferroni-adjusted, one-way, repeated measures MANOVAs were performed on each of the scales to ascertain whether results were impacted by the intervention. Results included a significant change in Self-Oriented Perfectionism and mindfulness was found at the end of group as well as at follow up. In both cases, there were significant differences between pre- and post-tests and between pre- and follow-up tests. Results indicate that mindfulness may be an appropriate intervention to reduce self-imposed forms of perfectionism on middle school students who are in Gifted and Talented programming.

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CHAPTER I

INTRODUCTION

The social-emotional development of gifted and talented (GT) individuals has been a source of interest and discussion for decades. Many educators, counselors, and parents of gifted students have noted the stressors of being identified as gifted and the ongoing pressure of meeting high performance expectations (Callard-Szulgit, 2003; Colangelo & Wood, 2015; Davis, Rimm, & Siegle, 2011). The issues that gifted students navigate are similar to those of non-identified youth, though their experiences may be different due to their increased intellect. For example, asynchronous development, or the disparity between mental and chronological age, can present potential difficulties for gifted children as they may be expected to demonstrate advanced social and emotional maturity to match their cognitive skills (Wiley, 2016). In addition, because they are identified as having the ability to perform and achieve highly, gifted youth may place more pressures on themselves as well as experience heightened expectations from others (Davis et al., 2011).

Unfortunately, youth who are gifted may develop unrealistic expectations for themselves and feel as though they must always be performing exceptionally. This self- or other-imposed pressure to succeed is closely related to perfectionism. Perfectionism has been defined as striving for flawlessness (Flett & Hewitt, 2002) and a state of being discontent with one's performance in the current moment, or fear regarding future inadequacy (Greenspon, 2012). Perfectionism can manifest in various forms. For

example, some individuals believe that those closest to them are demanding exceptional performance in at least some aspects of their lives (Socially Prescribed Perfectionism; Flett & Hewitt, 2002), whereas others may feel a self-imposed need to be flawless (Self-Oriented Perfectionism). Still others may hold these unrealistic expectations for others (Other-Oriented Perfectionism). It appears that gifted populations may be more likely to exhibit perfectionistic tendencies than their non-identified counterparts (Chan, 2011; Guignard, Jacquet, & Lubart, 2012). For example, significant differences have been found in rates of perfectionistic tendencies of 6th graders who have been identified as GT compared to those who had not (Guignard et al., 2012). Chan (2011) found that identified students in China also had higher levels of perfectionism. In addition, qualitative research and case studies lend support to the idea that GT students may be at risk for perfectionism and issues related to it (Adelson, 2007; Rimm, 2007; Schuler, 2000).

Although the research is somewhat mixed, most educators and practitioners view perfectionism as a negative characteristic. Perfectionism in gifted youth has been associated with social and emotional problems (Cross & Cross, 2015), including depression (Christopher & Shewmaker, 2010; Huggins, Davis, Rooney, & Kane, 2008; Reyes et al., 2015) and anxiety (Gnilka, Ashby, & Noble, 2012). The exact mechanism for the relationship between perfectionism and negative emotional health is not well understood, but it has been suggested that the unrealistically high expectations associated with perfectionism may contribute to youth feeling inadequate (Rimm, 2007). This inadequacy can lead to underachievement, dropping out of difficult endeavors, and feelings of anxiety or depression if unable to meet perceived standards, whether these are related to academic, athletic, or other areas of performance.

The number of GT youth who have been identified as perfectionistic is highly variable. Studies have suggested that anywhere from 10 (Vandiver & Worrell, 2002) to 72 percent (Dixon, Lapsley, & Hanchon, 2004) of gifted students may be identified as having some form of perfectionist cognitions or behavior, with the National Association for Gifted Children (“Perfectionism,” n.d.) estimating the percentage of gifted youth with perfectionism to be about 20 percent. Therefore, GT youth might benefit from programming that helps to reduce perfectionism and, in turn, the negative effects often associated with this characteristic. Currently, various interventions have been used to try to mitigate the effect of perfectionism, including affective programming (Mofield & Chakraborti-Ghosh, 2010), Cognitive Behavior Therapy (CBT; James & Rimes, 2018), and mindfulness (James & Rimes, 2018).

Mindfulness is the practice of living in the present: paying attention to each moment of the here and now, with a nonjudgmental, friendly, and curious frame of mind. This intervention has grown in popularity across neuroscience, psychology, and education for adults and has shown effectiveness with youth (Pepping, Duvenage, Cronin, & Lyons, 2016; Zenner, Herrnleben-Kurz, & Walach, 2014). Mindfulness interventions have been associated with increased cognitive abilities, resilience, and ability to manage stress (Zenner et al., 2014). There has recently been a call to implement mindfulness programming with GT youth specifically (Sharp, Niemiec, & Lawrence, 2017). Sharp and colleagues (2017) proposed that mindfulness could help GT students feel understood, find their strengths, and potentially mitigate the ruminative cognitions associated with perfectionism.

The practice of mindfulness may be considered antithetical to negative constructs such as perfectionism. After all, mindfulness is the ability to live in the moment without judging, and perfectionism represents a state of being discontent with one's performance in the current moment, or fear regarding future inadequacy (Greenspon, 2012). As discussed, GT populations appear to be at-risk for perfectionism, particularly given the added stressors of their advanced programming. Thus, an intervention such as mindfulness that may enable youth to reduce the experience of pressure (both from within and externally) could perhaps moderate the cognitions of perfectionism. This type of intervention may be particularly useful in middle school, as students are in a developmental stage rife with physical, cognitive, and emotional changes (Lawlor, 2014; Roeser & Pinela, 2014). Given the prevalence rates of perfectionism in gifted populations and the notion that all perfectionism has the potential to be maladaptive, it may be possible to reduce the amount and impact of perfectionism on gifted populations by providing early interventions. This is particularly salient for middle school students, who are experiencing a period of significant developmental change.

Significance of the Problem

Gifted student populations are often difficult to study, as there is little consistency across GT identification and programming. Programs are known by a variety of names across states, use different criteria for eligibility, and define giftedness and talent in any number of ways including scores on intelligence tests as well as indicators of creativity, leadership, and performing arts (McClain & Pfeiffer, 2012). Without a national standard for gifted programming, students may be more or less likely to be identified given their location, specific abilities, and other factors.

From a school-psychology perspective, gifted programming falls under the umbrella of multi-tiered systems of support (MTSS), a model that has widespread application and evidence in the United States (Jimerson, Burns, & VanDerHeyden, 2016). Within this three-tiered model, the first tier is the universal tier, or the umbrella under which all students fit. This tier encompasses the general education curriculum, and standardized assessments and population screeners are used in order to identify those students meeting standards and those who may need extra supports. The second tier represents a greater level of service delivery for those who are targeted as at-risk for developing a problem. Programming is generally offered through small-group interventions; it is for students who may need extra support but have the capacity to succeed with an increased intensity of service delivery. Finally, the third tier includes students who need the greatest level of service and may include individual direct service. This type of service may be directed towards either academic or social-emotional interventions (Doll & Cummings, 2008; Jimerson et al., 2016).

Although historically tiered systems of support have emphasized academic success, MTSS has promoted the integration of social and emotional supports into service delivery. The National Association of School Psychologists (NASP) has endorsed the three-tiered training model for the implementation of academic, social, and emotional supports within educational settings throughout the United States (Ysseldyke et. al, 2006). Within this context, GT programs would be considered a second-tier intervention. That is, in order to challenge GT students, schools have focused on either promoting single students to advanced grades or offering enrichment through placement in advanced classes related to their areas of giftedness. Gifted and Talented programs traditionally

focus on academic successes; however, incorporating a social and emotional curriculum into programming would give extra supports to a population of students that is rarely served as a group in non-academic contexts (Colangelo & Wood, 2015).

Although being gifted can in many ways enable students to achieve higher levels of functioning, research suggests that there are areas in which giftedness may present an added layer of difficulty for some students. For example, GT youth may struggle with peer relationships in adolescence. Researchers have found that GT students were rated by their peers as less socially preferred and were more likely to display negative self-concept in regard to same-sex friendships (Hoogeveen, van Hell, & Verhoeven, 2009). Studies have also found that highly gifted GT youth (those with IQs over 130; Davis et al., 2011) were more likely to report social difficulties (Lee, Olszewski-Kubilius, & Thomson, 2012). Additionally, GT youth may feel the need to hide their giftedness from others (Cross, 2016), and carefully consider how they will respond to questions of performance by their peers (Cross, Coleman, & Terhaar-Yonker, 1991). For example, Cross and colleagues (1991) found that GT students managed how others perceived them; minimizing or understating their abilities or performance two thirds of the opportunities presented to them.

Surprisingly, school dropout is a concern among gifted populations. Approximately 5% of GT youth leave school before receiving a diploma, meaning there could be as many as 160,000 GT youth at risk for dropout based on the most recent published data for public schools (National Center for Education Statistics; NCES, 2016; Renzulli & Park, 2002). The reasons for school dropout among GT youth include issues

related to boredom, lack of educational support, and lack of peer acceptance (Hansen & Toso, 2007; Ritchotte & Graefe, 2017).

Lack of student engagement is considered related to both underachievement and dropout (Landis & Reschly, 2013; Reschly, Appleton, & Pohl, 2014). When students are disengaged, either because they are bored or unchallenged, they may be more likely to perform under their ability level or to leave school entirely. It is possible that by providing supports early on to ensure GT youth are supported both academically and social-emotionally, school staff may help to reduce the chances that GT youth will demonstrate a pattern of underachievement or drop out (Landis & Reschly, 2013).

Finally, although there is no clear pattern of research supporting higher rates of internalizing disorders among gifted youth, it remains a persistent concern amongst those working with this population (Cross & Cross, 2015; Neihart, 2012). Teachers of gifted children consistently note that their students struggle in areas related to anxiety and depression and believe these experiences are related to their gifted status (Haberlin, 2015; Jackson, 1998). Individuals may feel heightened pressure to perform from those around them due to their gifted status or feel as though they must never fail and therefore experience anxiety related to these cognitions (Sharp et al., 2017). Based on his review of the GT literature, Haberlin (2015) found that though quantitative research did not always support increased anxiety in GT population, qualitative analyses and those who work with GT populations consistently note stress and anxiety as problematic.

Importantly, elements related to anxiety such as perfectionism, heightened sensitivity to the world around them, and levels of stress have been found to be higher in GT populations (Adelson, 2007; Baker, 1996; Roberts & Lovett, 1994). Specifically,

perfectionism has received a great deal of attention in the GT literature (Christopher & Shewmaker, 2010; Guignard et al., 2012; Haberlin, 2015; Huggins, et al., 2008). Anxiety and perfectionism are closely entwined, as experts have noted anxious cognitions and emotions as an underpinning of perfectionism (Greenspon, 2012). Conceptualizations of perfectionism as a construct vary (Flett & Hewitt, 2015). One of the most prevalent theories is that there are three elements to perfectionism: Self-Oriented, Other-Oriented, and Socially Prescribed (Hewitt & Flett, 1991). Self-Oriented Perfectionism is described as when individuals set unrealistic and excessively high goals and standards for themselves, Other-Oriented Perfectionism is focused on having unrealistic and excessively high goals and standards for significant others, and Socially Prescribed Perfectionism is perceiving that others are holding one to an exceptionally high and unrealistic standard (Enns & Cox, 2002). Although some researchers have promoted the idea that perfectionism can at times be adaptive for individuals, Flett and Hewitt (2015), proposed that perfectionism always has the potential to become maladaptive, and thus it is best perceived as a maladaptive trait.

An increasing number of studies have identified the potentially negative cognitive and affective impacts of perfectionism in child and adolescent populations. For example, adolescents who display perfectionistic traits are more likely to have recurrent automatic thoughts and ruminations, to display more depressive symptoms, and to worry more (Flett, Coulter, Hewitt, & Nepon, 2011). These results are consistent with previous research with adults that demonstrated that ruminative thoughts mediated the impact of perfectionism on psychological distress (O'Connor, O'Connor, & Marshall, 2007). Finally, it is important to recognize that rates of perfectionism are on the rise in the

United States, according to a meta-analysis of studies conducted between 1989 and 2016, so this trait can be seen as a growing concern (Curran & Hill, 2017).

As noted, gifted youth may be particularly prone to perfectionistic cognitions (Cross & Cross, 2015; Margot & Rinn, 2016). For example, Rimm (2006) found that 22% of GT middle-school students endorsed perfectionism as a self-descriptor as compared to only 16% of non-identified students. Dixon, Lapsley, and Hanchon (2004) reported that 38% of gifted juniors endorsed maladaptive perfectionism. When examining elements related to perfectionism, such as reactions to scholastic failure, Roberts and Lovett (1994) reported that gifted individuals were more likely to have negative reactions to failure than their non-identified counterparts. Finally, qualitative research and case studies have provided support for the idea that students who are GT have had negative experiences due to their perfectionism (Adelson, 2007; Rimm, 2007; Schuler, 2000).

Higher rates of perfectionism are correlated with depression among gifted children and adolescents (Christopher & Shewmaker, 2010; Huggins et al., 2008; Reyes et al., 2015), and a few studies have reported positive correlations between perfectionism and anxiety (Gnilka et al., 2012; Guignard et al., 2012). If current conceptualizations of perfectionism are correct, then it may be that as youth develop, and given environmental factors such as stress and failure, these perfectionistic tendencies may prove maladaptive and even pathological in later life (Flett & Hewitt, 2014; Flett & Hewitt, 2015).

Given that perfectionism is a recognized concern among gifted youth, it is important to identify potential prevention and early intervention strategies that are effective in reducing these potentially maladaptive cognitions. One potential intervention to help reduce the negative effect of perfectionism on gifted youth may be the use of

mindfulness practice. Mindfulness has been defined as living in the present and accepting each moment with non-judgment, and a friendly and curious frame of mind. Research on the effects of mindfulness practice suggest an increase in metacognitive awareness and greater awareness of one's feelings and reactions in their current situation (Broderick & Jennings, 2012). With this awareness, individuals practicing mindfulness may be able to prevent impulsive, automatic responses to situations. This makes mindfulness a particularly apt intervention for GT youth struggling with perfectionism. Since a common feature of perfectionism is increased rumination and automatic thoughts (Flett et al., 2011), mindfulness presents a promising approach for students to learn to prevent or manage these unwanted thoughts.

Adolescence is a time for physical, cognitive, and social change wherein youth are particularly malleable, and as such, it is an ideal time to implement preventive programming and social-emotional learning through interventions such as mindfulness (Lawlor, 2014; Roeser & Pinela, 2014). Schools in particular are an ideal place for mindfulness and other social-emotional curriculum because they provide easy, consistent access for youth to receive services (Weare & Nind, 2011). There are a number of mindfulness intervention curricula, but few have met the research criteria for effective social and emotional learning programs (Collaborative for Academic, Social, and Emotional Learning; CASEL, 2015). In addition, though many theorists have acknowledged the extreme pressures that some gifted youth experience and have noted that mindfulness may be a particularly impactful intervention for this population, relatively few studies have examined mindfulness interventions in gifted populations or

have followed an evidence-based curriculum (Doss & Bloom, 2018; Haberlin, 2015; Haberlin & O'Grady, 2018).

Haberlin and O'Grady (2018) conducted a mindfulness intervention with 2nd through 5th grade GT students using an MBSR guide that outlined ten mindfulness techniques to learn. They found that students qualitatively reported heightened awareness and increased calmness. Doss and Bloom (2018) reported more mixed qualitative results on their study of GT 8th grade students who participated in four weeks of mindfulness lectures loosely based in a curriculum. Specifically, some students reported using the newly learned skills in other contexts, while others struggled to understand the utility of the intervention. Therefore, the purpose of this study was to examine changes in GT youth's ratings of perfectionism before and after completing an established mindfulness curriculum.

Statement of the Problem

Because research suggests GT youth are at risk for higher rates of perfectionism (Chan, 2011; Guignard et al., 2012), prevention and early intervention programs may be effective in reducing their negative cognitions. Mindfulness has been increasingly used with young adolescents, including GT students, and has been demonstrated to be effective in increasing resilience, reducing stress, and increasing cognitive abilities (Greco, Baer, & Smith, 2011; Zenner et al., 2014). Therefore, the purpose of this study was to use an evidence-based mindfulness program with GT youth to determine whether it reduced self-ratings of perfectionistic thoughts and behaviors. Perfectionism is a quality of many gifted and talented students that may have negative impacts on their lives (Christopher & Shewmaker, 2010; Guignard et al., 2012; Huggins, et al., 2008).

Although some researchers have conceptualized certain aspects of perfectionism to be adaptive, the more common understanding is that perfectionism, even adaptive perfectionism, has the potential to become maladaptive (Flett & Hewitt, 2015). Given the potential for increased rates of perfectionism in GT youth, an intervention to prevent or intervene on perfectionistic tendencies is indicated. Using an evidence-based mindfulness curriculum to mitigate the impact of perfectionism could have positive and long-lasting effects for this population. Because the lessons are typically short and there is not a high level of specialization needed, mindfulness programming could be readily incorporated into the daily activities of gifted youth.

Research Questions and Hypotheses

To measure the effectiveness of a mindfulness program in reducing perfectionism and increasing mindfulness among GT young adolescents, a repeated measures design was used. Using three one-way, repeated measures, within factors MANOVA procedures, participants' ratings of perfectionism and mindfulness were compared to pre-test values at the completion of a mindfulness program and again five weeks later to determine whether any improvements were maintained. A conservative significance level of .017 was used, reflecting a Bonferroni correction, to determine the significance of the following research questions.

- Q1 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly lower levels of reported Self-Oriented Perfectionism after completion of the program and at a five-week follow-up?
- Q2 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly lower levels of reported Socially Prescribed Perfectionism after completion of the program and at a five-week follow-up?

- Q3 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly higher levels of reported mindfulness after completion of the program and at a five-week follow-up?
- H1 GT middle school students who participate in mindfulness programming will display significantly lower levels of reported Self-Oriented Perfectionism immediately following the intervention and at a five-week follow-up.
- H2 GT middle school students who participate in mindfulness programming will display significantly lower levels of reported Socially Prescribed Perfectionism immediately following the intervention and at a five-week follow-up.
- H3 GT middle school students who participate in mindfulness programming will display significantly higher levels of reported mindfulness immediately following the intervention and at a five-week follow-up.

Delimitations

One of the most serious delimitations of this research was that all students were drawn from the same school. Because the participants were drawn from a convenience sample from a known school with a large gifted program, and the school population is relatively affluent and predominantly Caucasian, the ability to generalize to other populations was limited. Furthermore, there was no control group, which always introduces the possibility that maturation may have accounted for any observed changes. However, since the intervention was so brief, it was unlikely that significant changes in perfectionism occurred naturally in this time frame. Finally, there was the possibility of response bias as parents and students opted in to the study, introducing the potential that they may have been more open to mindfulness practices.

Definition of Terms

Adolescence: Youth between the ages of 10 and 19 (World Health Organization, n.d.). In this study, this will include youth who typically range from eleven to fourteen.

Asynchrony: The disparity, often experienced by GT youth, between mental and chronological age (Wiley, 2016).

Gifted and Talented: “Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities” (Every Student Succeeds Act, 2015, p. 393).

Mindfulness: The practice of living in the present: paying attention to each moment of the here and now, with a nonjudgmental, friendly, and curious frame of mind (Kabat-Zinn, 2005).

Perfectionism: A multi-dimensional construct revolving around the need to be flawless (Flett & Hewitt, 2002). It involves a state of being discontent with one’s performance in the current moment, or fear regarding future inadequacy (Greenspon, 2012). This construct has been further divided into the following divisions (note: only Self-, and Socially-Prescribed Perfectionism will be assessed in this study).

Adaptive Perfectionism: The idea that perfectionism can lead to positive outcomes such as increased self-esteem and is not an inherently negative trait.

Maladaptive Perfectionism: When perfectionism is motivated by a need to meet excessively high standards and motivated by fear of disappointing others or a fear of failure (Flett & Hewitt, 2002).

Other-Oriented Perfectionism: One of three types of perfectionism in Hewitt and Flett’s (1991) conceptualization: having unrealistic and excessively high goals and standards for significant others.

Self-Oriented Perfectionism: One of three types of perfectionism in Hewitt and Flett's (1991) conceptualization: having unrealistic and excessively high goals and standards for oneself.

Socially-Prescribed Perfectionism: One of three types of perfectionism in Hewitt and Flett's (1991) conceptualization: perceiving that others are holding one to an exceptionally high and unrealistic standard.

CHAPTER II

LITERATURE REVIEW

In order to understand the importance of preventative programming with youth who are identified as Gifted and Talented (GT), it is helpful to consider the history and conceptualization of giftedness, different types of programming, and variations in the identification process. This review of the literature also outlines some of the social and emotional struggles of GT youth, and potential differences, both quantitatively and qualitatively, between them and their non-identified counterparts. One element of social-emotional well-being that is particularly salient for GT populations is perfectionism, thus an exploration of definitions, importance, and impact of perfectionism on youth populations and specifically GT populations is included. Finally, the use of mindfulness techniques as a potential intervention technique for aiding gifted adolescents is discussed.

Gifted and Talented

Definition of Giftedness

Defining giftedness and talent is not typically a straightforward endeavor, particularly because states are not required to define giftedness and talent the same way (McClain & Pfeiffer, 2012). However, one well-recognized definition comes from the Elementary and Secondary Education Act of 1965 (ESEA) as reauthorized and updated by the Every Student Succeeds Act (ESSA, 2015). This definition is as follows:

Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities (pg. 393).

This definition is similar to the one used in Colorado's Exceptional Children's Educational Act (ECEA, 2013), which defines GT youth as "persons between the ages of four and twenty-one whose abilities, talents, and potential for accomplishment are so exceptional or developmentally advanced that they require special provisions to meet their educational programming needs" (pg. 104). Colorado further separates GT youth into five subcategories: general or specific intellectual ability, specific academic aptitude, creative or productive thinking, leadership abilities, and visual, performing arts, musical or psychomotor abilities. Within the specific academic aptitudes, students may be classified as gifted in reading, writing, or math, or a combination of these.

History of Giftedness

Gifted and Talented programs have existed in the United States since the beginning of the 20th century. What began as a few classes in a limited number of cities gradually progressed to the point where a majority of all larger cities sponsored some form of GT programming by around 1920 (Davis et al., 2011). Lewis Terman was among the first scholars to actively recruit and study gifted children during this time. Since then, public support of and government funding for GT programs have waxed and waned over the past century. For example, in response to the then Soviet Union's launch of Sputnik, Congress passed the National Defense Education Act (NDEA) in 1958 in order to provide extra funding to education across all levels. It was the first law that included

provisions related to identification of GT youth (Jolly, 2009). This legislation not only enabled gifted students to be identified, but briefly celebrated them as being the nation's hope for increased competition in the perpetual intellectual battles of the Cold War. This focus was not longstanding, however, and interest in GT youth waned as the Cold War dragged on.

After a decade of silence on this population, then Commissioner of Education, S. P. Marland (1972) released a status report on Gifted and Talented students. This report noted "inadequate provisions" and "widespread misunderstanding" related to the needs of GT individuals (Marland, 1972; pg. 4), and cautioned that existing services were not reaching minorities and individuals from lower economic classes. He also emphasized that many GT individuals needed assistance in order to excel, a novel sentiment at that time (Davis et al., 2011; Marland, 1972). This report once more brought GT programming into the spotlight, although with the concurrent rise of the Civil Rights movement, public opinion shifted towards equity, and the focus became on providing equal opportunities to all students (Jolly, 2009).

GT programming again faded from public consciousness until 1993, when the Department of Education released a report that highlighted the lack of attention paid to GT students and the subsequent consequences (Ross, 1993). By examining data that compared the top performing students across multiple countries, it was found that U.S. students were consistently underperforming in math and science, in both elementary and secondary education. Ross (1993) suggested that this discrepancy was due to the lack of challenging programming provided to GT youth; in other words, it was not the students' abilities that were lagging behind those in other countries, but the lack of rigor in the

general education system, especially for the highest performing students. Even so, the United States continued to focus its legislative efforts and funding on lower-achieving students into the 21st century. Under President Bush, the No Child Left Behind (NCLB; 2002) Act of 2001 was passed as a means to ensure educational equality.

Though results from this Act indicated improved overall scores for non-identified students, particularly low-achieving students, these data showed little to no growth for gifted students (Loveless, 2008). It was not until 2015 when President Obama signed the Every Students Succeeds Act (ESSA) that provisions for gifted students were included in federal K-12 legislation. ESSA also reauthorized a government grant program that funds identification efforts for traditionally underrepresented GT populations such as low income and disabled students in primary and secondary schools (Jacob K. Javits Gifted and Talented Students Education Program).

Gifted Programming

According to most recent reports, there are over 3.1 million gifted students in public schools alone (NCES, 2016). No estimates of GT populations in private schools could be found, but it is assumed that this number increases when private institutions are included. GT programs are known by a variety of names across states, use different criteria for eligibility, and define giftedness and talent in any number of ways including scores on intelligence tests as well as indicators of creativity, leadership, and performing arts (McClain & Pfeiffer, 2012). For example, some states need teacher or parent nominations, while others look for evidence of creativity through specialized assessments. Most state standards involve some requirement for intelligence and/or achievement tests for entrance into gifted programming. Given the vast differences in

identification processes, there is little uniformity to cutoff scores needed to get into these programs. Furthermore, once identified for eligibility, elements of programs themselves vary greatly across districts. Without a national standard for gifted programming, students may be more or less likely to be identified given their specific abilities, location, and other factors. This variability makes it difficult to obtain reliable data related to the population of GT students as well as the type of programming delivered to those who have been identified (McClain & Pfeiffer, 2012).

Ability grouping. Gifted and Talented programs vary in how they are delivered; traditionally students receive specialized programming through ability grouping or acceleration. A more complex method for addressing the needs of GT students is through ability grouping. This approach has been defined as consisting of three major features: students are placed in small groups or classrooms based on their achievement level, placements are designed to provide students with more homogenous learning environment with teaching matched to needs, and these placements are not permanent or irreversible (Steenbergen-Hu, Makel, & Olszewki-Kubilius, 2016). It is estimated that 70.9% of middle schools in the United States offer ability grouping to their students (Callahan, Moon, & Oh, 2013). Some schools offer programming in which GT students spend their entire school day in a specific GT classroom (homogenous/between-class grouping), while others have separate small-group instruction for GT youth within a larger classroom (within-class ability grouping), and still others have courses for students of various grades who are advanced in a certain subject (cross-grade grouping). A final form of ability grouping is called special grouping, which is where GT youth have pull-out or honors classes specifically designed for them (Steenbergen-Hu et al., 2016).

In a recent second-order meta-analysis of ability grouping, researchers found that students of all ability levels benefit from within-class and cross-grade grouping (Steenbergen-Hu et al., 2016). They also found that GT students benefited from pullout or honors programs. Between-class groupings did not benefit students at any ability level. The overall findings indicated that schools that use ability grouping for specific classes while allowing GT youth to spend the greater part of their days with their non-identified peers was an appropriate method for enabling all students to succeed.

Acceleration. The second major type of programming for GT individuals is termed acceleration, in which students are allowed to “move ahead through the curriculum at a pace commensurate with their abilities” (Southern & Jones, 2015, p. 9). There are 20 different types of acceleration according to Southern and Jones (2015), including early admission to kindergarten and first grade, grade-skipping, telescoping (condensing the time it takes for material to be taught), self-paced instruction, and subject-matter acceleration. Acceleration enables GT students to access curriculum at a pace or a level that encourages engagement and challenge in the classroom. Acceleration has been shown to be beneficial to students, and some argue that it is essential to provide students with the option to accelerate in order to keep them stimulated and engaged in their learning (Colangelo, Assouline, & Gross, 2004). Approximately 68.2% of middle schools offer subject-matter acceleration and 48.3% offer grade-skipping (Callahan et al., 2013). Steenbergen-Hu and colleagues (2016) examined the efficacy of grade-based acceleration on GT individuals’ academic achievement in their second-order meta-analyses. They found that acceleration significantly contributed to a moderate impact on academic achievement across the longitudinal study (Steenbergen-Hu et al., 2016).

Therefore, acceleration is also a viable option to increase academic achievement of GT students.

Social-Emotional Well-Being

One element that has been noticeably lacking from a century of GT programming, legislation, and debate has been a focus on interventions related to the specific social and emotional needs of these students. When Terman studied GT youth in the early 20th century, he and his colleagues determined that due to their exceptional abilities in academic realms, that they must also be psychologically superior (Davis et al., 2011). A contemporary of Terman who also was considered an expert in the field of giftedness, Leta Stetter Hollingworth, disagreed with him, believing that apathy due to an easy curriculum was rampant among the gifted. She also noted the struggle inherent in a mature intellect residing in a child's body, dealing with a child's emotions (Davis et al., 2011). This tension became termed asynchrony and is still relevant to discussions of GT social-emotional well-being (Wiley, 2016).

Since the early writings of Terman and Hollingworth, various organizations and institutions have been designed to address the emotional needs of gifted youth, including the Guidance Institute for Talented Students (GIFTS; now discontinued), Supporting the Emotional Needs of Gifted Youth (SENG), and the Belin-Blank Center (Davis et al., 2011). However, most research into the social and emotional well-being of gifted students has focused on researching the existence of problems, rather than strategies for preventing or intervening with concerns. Specifically, scholars have examined the linkages between giftedness and peer relationship struggles (Cross, 2016; Gallagher, 2015), underachievement/dropout (Landis & Reschly, 2013; Matthews, 2006; Ritchotte

& Graefe, 2017), internalizing disorders such as anxiety and depression (Haberlin, 2015; Martin, Burns, & Schonlau, 2010; Neihart, Pfeiffer, & Cross, 2016), and perfectionism (Cross & Cross, 2015; Margot & Rinn, 2016), among others.

Although it is difficult to determine the exact cause of distress among gifted youth related to some of these issues, qualitative research seems to support that it is the experience of being gifted that contributes to these difficulties (e.g. Adelson, 2007; Cross & Cross, 2015; Ritchotte & Graefe, 2017; Rimm, 2007). For example, GT students have reported boredom and dissatisfaction with the school system due to their increased intellect, which has been found to be related to underachievement and dropout (Ritchotte & Graefe, 2017). Past exceptional performance may lead GT students to expect that every consecutive performance will rise to this level, which likely contributes to stress and anxiety (Cross & Cross, 2015). In fact, GT individuals have recounted stories of halting performance as soon as they ceased to achieve perfect scores (Rimm, 2007). These differences are harder to identify quantitatively, though there is some evidence for differences in well-being between youth who have been identified as gifted and their non-identified peers (e.g. Chan, 2011; Cross, 2016; Guignard et al., 2012; Hoogeveen et al., 2009).

Peer relationships. Quantitative findings are inconsistent as to whether GT students struggle with peer relationships more or less than their non-identified peers, with much of this variance related to age of the population and program setting (Cross, 2016). Broadly, elementary-aged students who have been identified as gifted were rated as more popular than their non-identified peers (Gallagher, 2015) and had comparable if not higher rates of self-concept (Bain & Bell, 2004; Litster & Roberts, 2011). As noted, this

outcome may be specific to younger students, as there have been more mixed results regarding positive peer relationships and GT students in secondary schools (Cross, 2016).

Many studies have found that there is no relationship between gifted status and successful peer relationships (Košir, Horvat, Aram, & Jurinec, 2016; Lee et al., 2012). Interestingly, it may be that different types of GT programming affects peer relationships differently among adolescents. Overall, research is mixed on the social and emotional impact of acceleration on peer relationships, though it trends positive (Steenbergen-Hu & Moon, 2011). Parents of gifted students who were accelerated reported that their children were more social and had better experiences social experiences in accelerated classrooms (Wardman, 2014). Gross (2004) found that students who were *not* accelerated experienced more social difficulties than those who were given advanced opportunities.

Although limited, there is some evidence that acceleration negatively impacted GT students. For example, Hoogeveen and colleagues (2009) examined the impact of acceleration on 357 gifted secondary students. They obtained a sociometric status for each accelerated student by asking each student in their class to identify the most and least liked peer, in order to ascertain social standing as ranked by other students. They also included questionnaires related to social self-concept. Overall, researchers found that accelerated students were more likely to exhibit negative self-concept related to same sex relationships than their peers. They were also less socially preferred and were overrepresented in the rejected sociometric grouping (Hoogeveen et al., 2009).

Sociometric popularity can be considered related to social intelligence, as the interaction of academic achievement and social intelligence has been found to be correlated with popularity in GT students, while achievement on its own was not (Meijs,

Cillessen, Scholte, Segers, & Spijkerman, 2010). This is important to note for gifted populations and points to the importance of including a measure of developmental and interpersonal strengths when deciding whether or not a student is mature enough for acceleration (Davis et al., 2011).

Regardless of whether gifted students struggle with peer relationships more or less than their non-identified peers, being gifted seems to affect how these youth approach social situations. GT individuals may feel the need to hide their giftedness from other students (Cross, 2016), or to manage the information others have related to their giftedness (Cross et al., 1991). When given a series of social situations, for example, gifted youth only told the truth in roughly one third of the opportunities and used various forms of camouflaging for the rest (Cross et al., 1991). Peer relationships may be especially difficult for students who are highly gifted (i.e. IQ above 130). Students with extremely high verbal abilities have reported more social difficulties than those whose abilities were lower or in other subjects such as math (Lee et al., 2012).

Gifted students may also experience more distress because their emotions and social abilities are asynchronous with their academic aptitude (Cross, 2016). In other words, they may have the ability to perform well above their peers but have the social and emotional capabilities consistent with their chronological age. Finally, environmental contexts other than program may impact peer relationships in youth. When teachers verbally identified students who were performing well in class, those same students had lower social preference ratings at the end of the year (Mikami, Griggs, Reuland & Gregory, 2012). These findings seemed to support that being a high achiever does not

automatically detract from social success, but there are certainly contexts in which it may be problematic.

Dropout. Given their advanced cognitive skills, it might be assumed that GT youth would have uniformly high grades and represent the strongest students both academically and behaviorally. However, there is some evidence to suggest that school dropout occurs at higher than expected rates for GT youth (Landis & Reschly, 2013). Dropout is a concern across all segments of the U.S. student population, as those who drop out are much less likely to report positive life outcomes (Rocque, Jennings, Piquero, Ozkan, & Farrington, 2017). For the reasons described earlier related to identifying youth as gifted, it is difficult to determine the prevalence of school dropout among GT students. For example, an examination of the high school records of 8000 GT students who participated in a private enrichment program indicated that only 1% of students had dropped out (Matthews, 2006). However, when a broader definition of giftedness was used, the percentage of gifted students who dropped out was larger (Landis & Reschly, 2013). Renzulli and Park (2002) identified a 5% rate of school dropout when they expanded the definition of giftedness to include those who had participated in three or more advanced or accelerated classes as well as those who have been formally identified through the district GT program. This rate was similar to non-identified student rates in this study (Renzulli & Park, 2002). Using data from 2012, this means that of the 3.2 million gifted students enrolled in public school that year (National Center for Education Statistics, 2016), 160,000 of them were at risk for dropout. However, though dropout rates are thought to be similar between gifted and non-identified populations, when

exploring GT students' reasons for dropping out, explanations related to gifted status arise.

Qualitative examinations of the experiences GT students who dropped out have led to the idea that dropout may be related to the experiences of GT students. In one study exploring the experiences of gifted dropouts, researchers interviewed 14 gifted adults between the ages of 20 and 69 who had dropped out of high school (Ritchotte & Graefe, 2017). They found that the most prevalent theme amongst participants was that they lacked educational support; specifically, these individuals believed that their schools had not provided adequate learning opportunities. Unfortunately, this disillusionment started in middle school for the majority of the participants in this study. Other reasons for dropping out included lack of home support, home issues, and changing to different schools. In addition, these individuals almost all endorsed lack of acceptance as a factor in their rationale for dropping out, with nearly half mentioning bullying specifically.

Sentiments related to disillusionment and lack of challenge in school were echoed in an earlier qualitative analysis that also examined 14 participants' experiences as gifted dropouts, though these were contacted and interviewed closer to the time of their exit from school (Hansen & Toso, 2007). Individuals in this study discussed the lack of advocacy within the schools and their belief that nobody in the school cared about their situation or believed in their abilities to perform. Most mentioned social issues as well, identifying lack of acceptance and bullying as particularly salient. These participants also frequently cited adverse life events such as deaths in the family or of close friends, mental illness, and other disruptive experiences. Finally, drug use was a common theme,

with many participants citing that the peers who most accepted them were also those who regularly abused drugs and alcohol.

Both studies lend credence to the idea that GT students struggle with elements related specifically to their giftedness including feeling as though they were not given opportunities to succeed and feeling not accepted by the general population. Overall, given that those identified as GT drop out at rates relatively similar to non-identified populations, the 5% dropout rate may be an underestimation when one takes into account the number of gifted underachievers.

Underachievement. Less drastic but perhaps a more insidious and pervasive problem among gifted youth is underachievement. Underachievement of gifted individuals is potentially more difficult to identify and track than dropout, as underachieving gifted students may perform at the same level as their same-age peers yet be capable of much more. Underachievement has been defined as the existence of “a severe discrepancy between expected achievement... and actual achievement (Reis & McCoach, 2000; pg. 157). Both expected and actual achievement must be demonstrated empirically; in other words, ‘expected achievement’ should be measured by intelligence and achievement test scores, and ‘actual achievement’ should be measured by grades or teacher reports. Because teachers are frequently the original source of nomination for GT programming, students who are not outperforming their peers may be missed, and thus those gifted students who are underachievers may not have the opportunity to be identified (Landis & Reschly, 2013).

Lack of student engagement is commonly associated with and a precursor to both underachievement and dropout (Landis & Reschly, 2013; Reschly et al., 2014). If

students are not engaged, they are less likely to display appropriate scholarly behaviors (McCoach & Siegle, 2003), and therefore may be at increased risk for underachievement. Thus, to some extent, disengagement and underachievement are two sides of the same coin. Traditionally there are four major elements of engagement as outlined by Reschly, Appleton, and Pohl (2014): cognitive, academic, affective, and behavioral. All four have implications for the success of gifted students (Landis & Reschly, 2013).

Poor academic engagement can be demonstrated in any number of ways such as students sleeping through class or engaging in other off-task behaviors during class periods, or failing to complete homework or class assignments, and can result in underachievement (McCoach & Siegle, 2003). Cognitive engagement includes the value students place in school, self-regulation, and goal setting (Reschly et al., 2014). McCoach and Siegle (2003) found that 81% of students were correctly identified as underachievers or achievers through the use of a logistic regression analysis measuring goal valuation and motivation/self-regulation self-reports. Goal valuation is defined as students believing that tasks are interesting, important, and relevant to their goals for both the present and later life. When students lacked motivation and had few academic goals, they were more likely to underachieve. It is easy to picture a bored gifted student who finds no value in an unchallenging curriculum and therefore does not perform the necessary tasks to achieve in school (e.g., studying for exams, completing homework). Self-regulation, or a student's ability to monitor and control cognitions, self-manage, and exert effort on tasks, is also an important component of cognitive engagement. The lack of self-regulation has been found to contribute to underachievement, indicating that when gifted students cannot or do not control how they manage themselves, they are less likely to

succeed academically, even if they have the capacity (McCoach & Siegle, 2003; Ritchotte, Matthews, & Flowers, 2014).

Behavioral engagement is the act of following school rules, both implicit and explicit, such as attendance, participation, classroom expectations, and being appropriately prepared for school (Reschly et al., 2014). In their review of evidence related to behavioral engagement amongst gifted underachievers and dropouts, Landis and Reschly (2013) found that attendance and other behavioral concerns were present in every study they reviewed, with a number mentioning struggles with study skills. The final element of school engagement is “students’ emotional experiences when they are in the learning context and/or explicitly involved with learning” (Reschly et al., 2014, p. 47), and includes students’ feelings of belonging and connection with school, including their perceptions of relationships with peers or teachers. The qualitative studies exploring school dropout among GT youth described their perceptions of teachers’ lack of caring and social difficulties with peers (e.g., Hansen & Toso, 2007, Ritchotte & Graefe, 2017). Overall, underachievement is a frequently noted problem among GT students should be considered an important element when examining the overall well-being of these youth.

Internalizing disorders. Even more concerning is the idea that GT individuals may be at heightened risk for psychopathology, particularly as it relates to internalizing disorders (Neihart, 1999; Neihart et al., 2016; Davis et al., 2011). The research around disorders such as depression and anxiety among GT populations has been largely mixed. A meta-analysis of rates of depression between gifted and non-identified individuals found no significant differences (Martin et al., 2010). A later review of literature (Cross & Andersen, 2015) reflected similar mixed with results with some studies identifying

greater rates of depression, and some lower. Ultimately, Cross and Anderson (2015) concluded that there is still inconclusive evidence as to whether GT youth are at higher or lower risk for depression. Meanwhile, studies of anxiety comparing GT youth to their non-identified peers have found mixed results as well. Although some have identified GT youth as having significantly lower anxiety than their average-ability counterparts (e.g., Reynolds & Bradley, 1983), others have reported a significantly higher level of anxiety among those identified as gifted (e.g. Tong & Yewchuk, 1996). In their meta-analysis of four studies comparing gifted youth to their non-identified peers, Martin et al. (2010) found that gifted and talented students reported significantly lower rates of anxiety overall. However, the authors suggested that cautioned be used in interpreting these findings because of the small number of studies and because the findings were largely guided by one of the largest studied conducted in the early 1980s. Because the standards and rigor of research has intensified over time, the authors suggested that contemporary studies were needed comparing gifted and non-identified youth on measures of both anxiety and depression.

One of the greatest shortcomings of this line of research is the lack of studies that include students in middle and high school, when levels of anxiety historically increase (Neihart, 1999). Given that much of the previous research has been completed with elementary school populations, rates of internalizing disorders may be lower overall within those populations and may mask potential differences that emerge as students develop into adolescents when the stigma of being different from one's peer may be more distressing. As anxiety becomes increasingly prevalent in adolescents (Collishaw,

Maughan, Natarajan, & Pickles, 2010; Twenge et al., 2010), differences in rates of internalizing behaviors may not emerge until students enter secondary school.

Although research has not supported significantly higher rates of internalizing disorders in gifted youth, this remains a persistent concern amongst those involved with this population (Davis et al., 2011, Neihart, 2012). Importantly, those who work with gifted children consistently note that students who struggle in areas related to anxiety and depression cite experiences related to their gifted status as the reason behind these negative feelings (Haberlin, 2015; Jackson, 1998). Additionally, just as underachieving students are less likely to be nominated by their teachers, so too are students struggling behaviorally or psychologically (Jackson & Peterson, 2003). As a result, those with emotional disturbances are rarely identified as gifted, and therefore are rarely, if ever, part of the studies of psychopathology with this population (Davis et al., 2011).

Importantly, analyses of elements related to anxiety such as perfectionism, heightened sensitivities, and an inability to manage stress have been found to be higher in gifted and talented populations (Adelson, 2007; Baker, 1996; Haberlin, 2015; Roberts & Lovett, 1994). Unfortunately, GT populations may be overlooked when it comes to social and emotional supports, as most efforts are focused on helping them to succeed academically (Colangelo & Wood, 2015; Mofield & Chakraborti-Ghosh, 2010). GT youth frequently have no differentiated social-emotional supports offered through the school system, and counselor education programs do not train future school counselors on how to work with gifted students (Colangelo & Wood, 2015; Peterson, 2009).

A final element to consider is that GT students may be able to mask their symptoms on self-report measures. That is, they may not report their symptomology

accurately if they do not wish to disclose their emotional state (Jackson & Peterson, 2003). However, because many aspects of personal experiences such as internalizing disorders and perfectionism can be harder to identify from outside sources (Auger, 2004), self-report, for better or worse, remains one of the best ways of identifying struggling youth from a population perspective.

Overall, GT youth navigate many of the same social and emotional waters as their non-identified counterparts, but may struggle more because of their perceived difference, asynchronous development, and perception that they are not benefitting from school programming. At the same time, it is important to note that GT students have many adaptive traits that contribute to their well-being. For example, GT students rate themselves as equal to or higher in self-concept than their non-identified peers (Lee et al., 2012, Litster & Roberts, 2011). They also rated themselves higher than non-identified peers in ethical sensitivity, suggesting that their advanced cognitive abilities may allow for greater understanding of and identifications with moral situations (Schutte, Wolfensberger, & Tirri, 2014; Tirri & Nokelainen, 2007). These findings were consistent with other work suggesting that moral judgment was higher in GT youth as compared to their non-identified peers (Alnabhan, 2011; Lee & Olszewski-Kubilius, 2006). Scholars remain divided over whether there are empirical differences, other than cognitive ability, between GT youth and their peers. However, evidence is mounting to suggest that at the very least, this population should receive specialized supports that address their experience of being identified as gifted.

Perfectionism

Perfectionism, which is not a disorder but has the potential to be maladaptive, has been associated with GT populations for decades (Speirs Neumeister, 2018). Conceptualizations of perfectionism, stated succinctly as “the striving for flawlessness” (Flett & Hewett, 2002, p. 5), and more broadly as a state of discontentment with one’s current performance or fearing future inadequacies (Greenspon, 2012), have gradually expanded over the last half a century (Sirois & Molnar, 2016). The predominant thought of the 1970s and 1980s was that perfectionism was one-dimensional and pathological. An early, major contributor to the study of perfectionism considered it to be something that started in childhood, was impacted by parents, and was consistently related to negative outcomes (Burns, 1980). At that time, perfectionism was considered binary; one either was a perfectionist or not. Very little research was carried out on the constructs that might contribute to perfectionism. In the 1990s, conceptualizations of perfectionism started to shift as theorists began to hypothesize that perfectionism was multidimensional and more nuanced (Flett & Hewitt, 2015).

Two major theories related to perfectionism emerged in the 1990s that portrayed perfectionism through a multidimensional lens. The first conceptualized perfectionism as being comprised of six major components: (a) concern over mistakes, (b) excessively high personal standards, (c) high parental expectations, (d) parental criticism, (e) overemphasis on precision, organization, and order, and (f) doubt related to actions (Frost, Marten, Lahart, & Rosenblate, 1990). Frost and colleagues developed a measure to examine these six components, the Multidimensional Perfectionism Scale (commonly known now as the FMPS). Interestingly, high personal standards as well as organization

were correlated with positive personal characteristics, suggesting that elements of perfectionism can be positive (Frost et al., 1990). This conceptualization was one of the first examples of viewing perfectionism as multifaceted and not necessarily a negative attribute.

An alternative conceptualization of perfectionism introduced during this same period took into consideration interpersonal and intrapersonal elements of perfectionism. In this conceptualization, there were three major types of perfectionism: Self-Oriented, Other-Oriented, and Socially Prescribed (Hewitt & Flett, 1991). Self-Oriented Perfectionism (SOP) was described as when individuals set unrealistic and excessively high goals and standards for themselves, Other-Oriented Perfectionism (OOP) focused on individuals having unrealistic and excessively high goals and standards for significant others, and Socially Prescribed Perfectionism (SPP) was perceiving that others are holding one to an exceptionally high and unrealistic standard (Enns & Cox, 2002). From this perspective, those who struggled with Self-Oriented Perfectionism derived no pleasure from meeting goals, and often believed they could have done better (Brustein, 2014). Socially-Prescribed perfectionists, on the other hand, often felt helpless because they believed the goals others had set for them were impossible to achieve. Finally, Other-Oriented perfectionists were critical of others and were considered to have a form of externalized Self-Oriented Perfectionism.

The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 2004) measured perfectionism using these three subtypes, and is one of the most widely used assessments of perfectionism for adults. The six-factor developed by Frost et al. (1990) and three-factor model (Hewitt & Flett, 1991) were found to overlap. For example, excessively

high personal standards (Frost et al., 1990), was similar to Self-Oriented Perfectionism (Hewitt & Flett, 2004), and concerns for mistakes, high parental expectations, and parental criticisms were correlated with socially oriented perfectionism (Brustein, 2014).

One of the most revolutionary concepts in the perfectionism literature was the introduction of the concept of adaptive perfectionism. That is, that perfectionism does not have to be entirely pathological, and certain elements of perfectionism may even be adaptive and contribute to the well-being of individuals (Enns & Cox, 2002). Those who supported the construct of adaptive perfectionism argued that what differentiates adaptive from maladaptive perfectionism was whether individuals were able to feel a sense of satisfaction and belief in their ability to achieve meaningful goals (Gnilka et al., 2012). According to this theory, adaptive perfectionists were able to take successes at face value, whereas maladaptive perfectionists tended to ruminate on how much more they could have succeeded (Enns & Cox, 2002). This position has not been accepted by all clinicians and researchers. Brustein (2014), a psychologist who specializes in working with those with perfectionistic tendencies, views all aspects of perfectionism as negative. In his compilation of a list of common themes related to perfectionism, he noted that concern over mistakes and doubts about actions were most correlated with psychopathology, although any of these themes could negatively impact an individual's well-being.

Though the original three factor model of Hewitt and Flett (1991) predominantly conceived of perfectionism as negative, later research has introduced a more nuanced understanding of perfectionism (Herman, Wang, Trotter, Reinke, & Ialongo, 2013). For instance, though Socially Prescribed Perfectionism (SPP) has been correlated with many negative outcomes (Flett et al., 2016, McCreary, Joiner, Schmidt, & Ialongo, 2004), the

relationship between these outcomes and Self-Oriented Perfectionism is not as clear. Currently, many researchers in this field support the idea that although certain facets of perfectionism have the potential to be partially adaptive at points in an individual's life, they acknowledge perfectionistic tendencies also have potential to negatively impact individuals, particularly during times of heightened stress or when dysfunction is evident (Flett & Hewitt, 2015). Greenspon (2012) succinctly stated that it is better to emphasize "...helping perfectionists to utilize their talents in the pursuit of excellence... [rather than] on helping perfectionists utilize their perfectionism in healthy ways" (p. 603). In other words, the emphasis should not be on perfectionism at all, but rather on striving for excellence. Again, although there is some research to support the potential benefits, the majority of studies have identified the negative correlates of perfectionism including higher levels of anxiety (Burgess & DiBartolo, 2016; Gnilka et al., 2012; Flett et al., 2011) anorexia (Bardone-Cone et al., 2007), and depression (Lasota & Kearney, 2017; Rice, Ashby, & Slaney, 1998).

Studies of perfectionism of children and adolescents are lagging behind those of adults (Flett et al., 2011), likely due to the relatively few scales designed to measure this construct in younger populations (O'Connor, Dixon, & Rasmussen, 2009). One of the most commonly used scales, the Child and Adolescent Perfectionism Scale (CAPS), was derived from the original Hewitt-Flett MPS (1991). Though the CAPS was not formally published until 2016, this instrument has been available since 2000 and has been used in over 50 studies around the world (Flett et al., 2016). The published version includes Self-Oriented Perfectionism (SOP) and Socially Prescribed Perfectionism (SPP) from the original MPS but omits Other-Oriented Perfectionism. The rationale behind only

measuring two of the three factors in childhood and adolescence is that the developmental onset of Other-Oriented Perfectionism is unknown.

In their validation study of this instrument with school-aged Canadian students, evidence was found to suggest that although Socially Prescribed Perfectionism (SPP) was correlated with overall psychiatric symptoms and depression (in other words, was maladaptive), Self-Oriented Perfectionism did have some adaptive correlations, particularly with school enjoyment and effort, among high school students (Flett et al., 2016). Despite this finding that some aspects of perfectionism may have some positive elements, in their review of all measures of perfectionism for children and adolescents, Leone and Wade (2018) specifically recommended the CAPS and conceptualized perfectionism as a negative construct.

Perfectionism in Youth

Top perfectionism researchers suggest four main hypothesized models for how perfectionism develops (Flett, Hewitt, Oliver, & Macdonald, 2002). The first model advanced was that of social learning, wherein children of perfectionistic parents develop perfectionistic tendencies through social imitation. Though research has shown promising support for this hypothesis, correlations between parent and child perfectionism cannot rule out a heritable element (Flett et al., 2002). A second model of perfectionism followed a social expectations model. In this model, parents who expected their children to be perfect would be more likely to raise children who had high and potentially unrealistic expectations for themselves. This model has been recently validated, as researchers experimentally controlled mothers' perfectionistic child-rearing behaviors

and found that children had increased levels of SOP in response (Mitchell, Broeren, Newall, & Hudson, 2013).

The third model of how perfectionism develops was described as a social reaction model, which asserts that children developed perfectionistic tendencies as a reaction to a harsh environment, in order to protect themselves from harm (Flett et al., 2002). Finally, the anxious rearing model suggested that anxious parents may contribute to the development of perfectionistic traits in their children. It is important to note that studies that directly examine these models are rare, and only the first two models have research to support their existence (Flett & Hewitt, 2002; Mitchell et al., 2013).

In general, studies have focused on the cognitive and affective outcomes of perfectionism on children and adolescents. For example, adolescents who display perfectionistic traits are more likely to have recurrent automatic thoughts, depressive symptoms, and to worry more (Flett et al., 2011). These findings are consistent with previous research on adults that shows that ruminative thoughts may mediate the impact of perfectionism on psychological distress (O'Connor et al., 2007).

Noticeably lacking from studies of perfectionism is intervention and treatment research (Morris & Lomax, 2014). In a review of studies of perfectionism in children and adolescents, Morris and Lomax (2014) found 84 addressed mental health and perfectionism correlations, 23 discussed the development, 19 involved assessment strategies, and only 7 examined potential treatments of perfectionism. Among the treatments found, two were play therapy case studies, three were group-based quasi-experimental interventions, and two were randomized control trials (RCTs). For all but the case studies and one quasi-experimental trial, perfectionism was one of many

variables studied and not the focus of the studies. Wilksch, Durbridge, and Wade (2008) conducted the only study that examined perfectionism treatment explicitly. In that study, which sought to reduce risk of eating disorders, 138 10th grade females were randomly assigned to a perfectionism intervention, a media literacy program, or a control program. The perfectionism intervention was loosely based on a book on perfectionism but was not manualized. Compared with the media literacy intervention and the control group, those who were directly instructed in the impact and issues with perfectionism scored significantly lower on concern over mistakes and personal standards. The two RCTs described in the Morris and Lomax (2014) study used Cognitive Behavior Therapy (CBT) to address anxiety, and measured perfectionism as a correlate. Both found that perfectionism rates decreased after the CBT intervention. Because CBT focuses on what individuals are thinking and how this impacts their behavior and emotions, it suggests that interventions that focus on reducing maladaptive cognitions and ruminations associated with perfectionism may be effective.

Finally, it is important to note that perfectionism has been demonstrated to be a growing problem among youth (Curran & Hill, 2017). Researchers investigating rates of perfectionism in college age students examined results from 164 studies and 41,641 British, Canadian, and American students on the scores on the MPS between 1989 to 2016 (Curran & Hill, 2017). They found that rates of perfectionism have been increasing linearly across the decades. Ultimately, Curran and Hill (2017) found a 32% increase in rates of SPP, a 10% increase in SOP, and a 16% increase in OOP. Studies of other populations have also found similar increases. For example, mathematically gifted Czech adolescents reported significantly higher rates of two facets of perfectionism in 2010

versus 2005 (Portesova & Urbanek, 2013). These were concerns over mistakes, and parental expectations, both of which are related to maladaptive perfectionism.

Perfectionism in Gifted Populations

As noted, there has been a great deal of research with gifted youth across various areas in order to better understand their unique experiences. Given their high performance in many areas, it seems natural that researchers have attempted to obtain an estimated prevalence rate of perfectionism as well as greater knowledge of the potential consequences in this population (Speirs Neumeister, 2016). Gifted students are more likely to display perfectionistic tendencies when compared to non-gifted students in the same or similar grades (Baker, 1996; Chan, 2011; Guignard et al., 2012). Guignard and colleagues (2012) found that in their study of gifted and non-gifted fifth and sixth graders, gifted sixth graders had a higher mean overall than their non-identified counterparts in levels of both SPP and SOP. Among Chinese students, Chan (2011) found that there were significantly more gifted perfectionists than non-identified perfectionists in his study of 320 gifted and 882 non-identified youth. However, earlier research did not support this relationship. In their large study, Parker and Mills (1996) examined 600 GT and 418 non-identified 6th grade students and found no statistically significant differences on measures of perfectionism. These researchers hypothesized that there may be a labeling bias in that teachers and others who work with GT students may label certain types of behaviors as indicative of perfectionism while teachers of students with more diverse abilities may identify similar behaviors in different ways.

Nevertheless, there are ongoing calls by those who work with GT students to continue addressing perfectionism in this population, regardless of whether differences

are supported empirically (Callard-Szulgit, 2003; Cross & Cross, 2015; Margot & Rinn, 2016). Qualitative research and case studies have supported that students who are GT may be at increased risk for perfectionism (Adelson, 2007; Rimm, 2007; Schuler, 2000). Adelson (2007) discussed different typologies of perfectionism observed through years of teaching GT classes, noting regardless of the type of group she worked with, or the number of people in it, unhealthy perfectionism was a consistent finding. Schuler (2000) surveyed and interviewed 20 GT middle school students and found that 29% of the students reported maladaptive perfectionistic tendencies, 58% identified as “normal perfectionists,” and only 13% did not report any perfectionistic tendencies. When examined qualitatively, she found that those with the highest levels of perfectionism were strongly fixated on mistakes and reported heightened levels of anxiety. Rimm (2006) surveyed gifted and non-identified students mark to which extent they ascribed to various characteristics and found that 22% of GT middle-school students endorsed perfectionism as a self-descriptor, which was statistically different from the non-identified students, only 16% of whom identified this trait. When examining elements related to perfectionism, such as reactions to scholastic failure, Roberts and Lovett (1994) found that gifted individuals were more likely to have negative reactions to failure than their non-identified counterparts. The lack of consensus as to whether GT youth have higher rates of perfectionism than their non-identified peers likely relates to ongoing debates behind definitions of perfectionism, varying methods of studying it, and the difficulties of achieving statistical significance in a GT population given the different methods for identifying giftedness (Chan, 2011).

Whether rates of perfectionism in gifted students differ significantly from non-identified individuals, there is substantial evidence that GT youth are struggling with perfectionism. Studies have found anywhere from 10 (Vandiver & Worrell, 2002) to 89 percent (Orange, 1997) of gifted students were identified as perfectionists, with the most common estimates in the 20-30% range. Results as high as 89 percent are unusual and may have been an artifact of the study design. Students had the option to attend a perfectionism lecture where they were evaluated; thus, those struggling with perfectionistic tendencies may have been more drawn to the lecture (Orange, 1997). Thirty-eight percent of juniors in a school for academically gifted high school students in the United States endorsed maladaptive perfectionism in the Dixon et al. (2004) study. When including what Dixon and colleagues considered adaptive perfectionism, the percentage of students who endorsed some form of perfectionism in this school rose to 72%. Given current conceptualizations in which all perfectionism has the potential to ultimately result in negative outcomes, this higher number presents a notable concern (Flett & Hewitt, 2015). The 20-30% rate of perfectionism appears to hold up in international populations as well. In a population of 320 Chinese gifted students, Chan (2012) found that 29% scored in the maladaptive perfectionism range, with a higher percentage scoring high for adaptive perfectionism.

Given the interest in gifted populations and perfectionism, numerous studies have examined negative correlates between perfectionism and social and emotional problems (Cross & Cross, 2015). For example, rates of perfectionism amongst GT child and adolescent populations have been found to be correlated with depression (Christopher & Shewmaker, 2010; Huggins, et al., 2008; Reyes et al., 2015). Interestingly, this

association has not been as clear for anxiety. One study of gifted children aged seven to fourteen found that higher rates of perfectionism were negatively correlated with anxiety (Christopher & Shewmaker, 2010). Two studies reported significant positive relationships between perfectionism and anxiety: one in gifted undergraduate populations (Gnilka et al., 2012) and another in a combination of gifted and non-identified ten and eleven-year-olds (Guignard et al., 2012). While these findings suggest that there is mixed evidence between perfectionism and the internalizing symptoms of depression and anxiety, there have not been any longitudinal studies to determine whether these correlations change or stabilize over time. If current conceptualizations of perfectionism are correct, then it may be that as time goes on, and given environmental factors such as stress and failure, these perfectionistic tendencies may prove maladaptive and even pathological in later life (Flett & Hewitt, 2014; Flett & Hewitt, 2015).

Mindfulness

Given the increased risk for rumination and cognitions related to perfectionism, interventions that help individuals accept the present moment without obsessing over current or future performance are particularly salient. One such potential intervention is mindfulness. Mindfulness, or the practice of living in the present paying attention to each moment of the here and now, with a nonjudgmental, friendly, and curious frame of mind, made its way from Asia with the help of Jon Kabat-Zinn. Kabat-Zinn ran a clinic in Massachusetts from the 1970s onward for those with chronic pain and stress (Kabat-Zinn, 2005; Weare, 2016). He developed what he termed a mindfulness-based stress reduction (MBSR), in which he took his own knowledge and understanding of Buddhist meditations, secularized them, and applied these principles to the patients in this clinic,

with great success. Within the mindfulness perspective, nonjudgmental acceptance of each moment enables one to connect with oneself and to truly pay attention to the present. Kabat-Zinn (2005) terms this “non-doing” (pg. 20). Mindfulness can increase metacognitive awareness and help individuals be aware of how they are feeling and reacting to their current situation (Broderick & Jennings, 2012). With this awareness, individuals practicing mindfulness may be able to prevent impulsive, automatic responses to situations.

Mindfulness-based interventions and studies can now be found in the fields of neuroscience, psychology, and education (Zenner et al., 2014). They have been shown to improve attentional control, self-awareness, and the ability to label one’s emotions (Greeson, 2009). In neuroscience, studies have examined the effects of mindfulness meditation on the amygdala in subjects who reported average (Desbordes et al., 2012) and high levels of stress (Taren et al., 2015). The amygdala generally shows greater activation when subjects are stressed. However, Taren and colleagues (2015) found that those individuals who were given a three-day intensive mindfulness meditation training had reduced right amygdala activation as opposed to those in the comparable relaxation training without a mindfulness component. Even in a study of individuals who were not reporting high levels of stress prior to a mindfulness intervention, significant decreases were found in amygdala activation for those in a mindfulness meditation group (Desbordes et al., 2012). Mindfulness meditation may contribute to lower levels of amygdala activity in response to stress and may help individuals remain calmer in the face of stress. Interestingly, participants in another mindfulness meditation study displayed lower overall brain activation than their control-group counterparts, which the

authors posited might be due to a greater acceptance of their internal state (Tang et al., 2009).

Mindfulness research has also been growing exponentially in psychological research. Studies examining everything from attention to academic performance to emotion regulation have been shown to be improved by mindfulness (Tang, 2017). Given that mindfulness includes a “sustained state of purposeful attention that stands in contrast to the fragmented automaticity associated with multitasking” (Zelazo & Lyons, 2012; pg. 156), it is hypothesized that MBSR promotes top-down aspects of control such as cognitive flexibility and sustained attention, as opposed to the more emotionally reactive or snap decision-making facets of bottom-up control. This theory of the mechanism by which mindfulness may help individuals is particularly salient for adolescents, who are learning these skills during this time period.

Mindfulness in Adolescence

Adolescence presents an ideal time to implement preventive programming and social emotional learning through interventions such as mindfulness, as youth are changing physically, cognitively, and socially, and are more malleable during this period (Lawlor, 2014; Roeser & Pinela, 2014). Research into dispositional mindfulness, or heightened frequency and intensity of mindful states, has important correlations within adolescent populations. For example, those adolescents who are high in dispositional mindfulness have been found to have a lower risk for psychopathology (Pepping et al., 2016) and have decreased psychological distress (Tan & Martin, 2013). Children and adolescents’ levels of mindfulness have also been positively correlated with overall quality of life ratings, and negatively correlated with internalizing behavior problems and

somatic complaints (Greco et al., 2011). Because mindfulness appears to be related to positive outcomes, it follows that interventions designed to increase levels of mindfulness may have particular salience for young adolescent populations, especially those who are struggling with maladaptive cognitions.

Schools are an excellent place for social-emotional curriculums such as mindfulness interventions to be implemented, as they provide easy access to students and available space for children to receive services (Weare & Nind, 2011). As such, interest in the use of mindfulness in school settings has grown substantially. However, the very nature of schools makes these interventions noticeably different. Interventions need to be tailored specifically to the school setting in order to be functional. Currently, there are a number of mindfulness interventions for children and adolescents that are gaining popularity in the schools. MindUP (Hawn Foundation, 2011) incorporates mindfulness into its social-emotional curriculum for pre-K through 8th grade. The Mindfulness in the Schools Project (mindfulnessinschools.org) is another curriculum for teachers to incorporate into their lessons. However, there are only four mindfulness curricula that have met research criteria for effective social and emotional learning programs for adolescents (CASEL, 2015). These programs are Learning to Breathe (Broderick, 2013), Transformative Life Skills (Bose, Ancin, Frank, & Malik, 2017), .b (Mindfulness in Schools Project, n.d.), and Kripalu Yoga (www.kripalu.org). Kripalu Yoga and Transformative Life Skills are both yoga-based programs for secondary students. .b focuses on attention training skills and it has predominantly been used in the United Kingdom. Learning to Breathe is based in MBSR and has been used in multiple studies in the United States to reduce perceived stress and increase emotional regulation skills

(Metz et al., 2013), as well as to increase metacognitive awareness (Broderick & Jennings, 2012).

In their meta-analysis of mindfulness-based interventions in school settings, Zenner and colleagues (2014) noted the importance of mindfulness skills within schools because they are a “foundation and basic pre-condition for education” (pg. 2); in other words, the basic tenets of mindfulness can be useful and potentially even essential for success in the classroom. They found that the largest effect sizes for mindfulness interventions in schools were for cognitive performance as demonstrated through attentional and creative tests ($ES=.80$), and they also found moderate effect sizes for stress measures ($ES=.39$). Mindfulness interventions have also been found to help with anxiety (Felver, Celis-de Hoyos, Tezanos, & Singh, 2015), as well as externalizing behaviors (Fung, Guo, Jin, Bear, & Lau, 2016).

Only a handful of studies examining mindfulness and perfectionism in students were found, and all were conducted with university or post-graduate students. Hinterman, Burns, Hopwood, & Rogers (2012) examined levels of mindfulness and its correlation with maladaptive perfectionism, depression, anxiety, self-esteem, coping, and life satisfaction in undergraduate students (Mean age = 19.6 years). They found levels of mindfulness to be significantly negatively correlated with negative perfectionism, and that those with negative perfectionism were more likely to use ruminative coping techniques (Hinterman et al., 2012). They also found that mindfulness was positively related to coping and self-esteem. Another study on undergraduate and graduate students compared mindfulness interventions on perfectionism with the use of a cognitive behavior therapy (CBT) self-help guide and found that the mindfulness intervention was

correlated with significantly lower levels of perfectionism and increased levels of self-compassion (James & Rimes, 2018).

Potential mediators between perfectionism and psychological distress may include mindfulness elements such as nonjudgmental approaches that were inversely related to self-criticism. Surprisingly, present-moment awareness was correlated with unhealthy perfectionism, though not with distress (James, Verplanken, & Rimes, 2015). The authors suggested that mindfulness interventions related to perfectionism should therefore focus more on non-judgment of the present moment. A qualitative investigation of an MBSR program with university students found that students who completed an 8-week group mindfulness intervention noted a decreased need to be perfect when interviewed after the intervention (Kerrigan et al., 2017). Finally, a study investigating university students with low and high levels of mindfulness found that higher levels of mindfulness mediated the impact of SPP on distress (Short & Mazmanian, 2013). It is possible that mindfulness does not necessarily eliminate all aspects of perfectionism but reduces the distress that is commonly associated with some of the cognitions. This research with young adults seems to support the promise of mindfulness as a mediator for perfectionism in adolescence, and particularly for potentially at-risk populations such as GT youth.

Mindfulness in Gifted Populations

Though there has been a call for mindfulness programming in gifted youth, few studies have examined this type of intervention with this population (Sharp et al., 2017). Many theorists have noted the extreme pressures that gifted youth endure, and as such, interventions that can reduce stress such as mindfulness may be perfect for this population (Haberlin, 2015). Only a few studies were found that directly examined

implementing mindfulness curricula with GT populations. Haberlin and O'Grady (2018) examined the qualitative experiences of 24 GT elementary students enrolled in mindfulness programming. Children in grades two through five were given 10 weeks of lectures and practice using mindfulness techniques. There was no specific curriculum used, but each week students learned another mindfulness technique, including belly breathing, mindful eating, and progressive muscle relaxation. They found that students reported heightened awareness and increased calmness.

Doss and Bloom (2018) recently completed a mixed methods study with 29 gifted adolescents who were in the 8th grade at the time of the study. Again, no specific curriculum was used; instead a language arts teacher found different audio and visual resources online to frame discussions around and practice mindfulness. The teacher also used the MindUp curriculum (Hawn Foundation, 2011) to inform discussions, though it was not followed formally. Students reported on their experiences with mindfulness interventions each week for five weeks. The authors did not find significance for the effect of mindfulness on anxiety or perfectionism, although no specific data were reported. The majority of the reported results focused on the experiences of the students going through the program. For example, the student who rated herself the highest on a perfectionism inventory noted that the mindfulness exercises helped her recognize that she was capable and would have the time to complete necessary objectives. Students also reported using mindfulness techniques outside of the classroom; they applied them to preventing arguments with siblings, falling asleep, and concentrating on homework.

Ultimately, few studies exist examining mindfulness with gifted populations or exploring its effect on perfectionism specifically. A study that explores the effects of an

empirically supported mindfulness program on ratings of perfectionism among a population of GT young adolescents would add to our understanding on the potential of this intervention. If supported, it could provide a valuable intervention approach for decreasing unhealthy perfectionism. A stronger experimental design, that includes a follow up phase to determine whether any differences persist after the intervention has ended, allows for the ability to make stronger conclusions regarding the effectiveness of mindfulness. Furthermore, a standardized approach lends itself more easily to replication in future studies.

Conclusion

Given the research on the negative effects of perfectionism and the potentially higher rates found in GT youth, introducing preventive programming that may help youth manage their unhelpful thoughts seems warranted. The results of this research may help to fill a gap in the literature as related to social emotional programming for GT youth. Mindfulness has been suggested as an intervention for gifted populations to assuage a variety of ills, yet few studies have actually examined the impact of a mindfulness curriculum on gifted students. This study addressed the important question of whether developmentally appropriate, evidence-based mindfulness programming reduced levels of perfectionism in gifted populations.

CHAPTER III

METHODOLOGY

This study used three one-way, repeated measures, within factors MANOVA procedures in order to determine whether GT adolescents who participated in a six-week mindfulness intervention reported reduced levels of perfectionism and increased levels of mindfulness. Two facets of perfectionism were examined: Self-Oriented (SOP) and Socially Prescribed (SPP) wherein SOP is self-imposed perfectionism and SPP is an individual's perceptions of another's expectation of perfection. Mindfulness was measured using one total-score scale. Levels were measured immediately prior the intervention, at the completion of the intervention, and between five and six weeks later to determine whether any observed effects were maintained. Based on the recommendations of Gersten and colleagues (2005) for quasi-experimental research, this study followed appropriate quality research indicators. That is, prior to implementation power analyses were completed to determine an appropriate sample size, internal consistency reliability was measured within the sample, and outcomes at pre-intervention, post-intervention, and at follow up were gathered.

Participants and Setting

The participants in this study were students who had been identified as GT at their middle school (i.e., Grade 6-8) located in a Western state. The total number of identified GT students at the school was 97. Participants were in sixth, seventh, or eighth grade,

which generally includes children aged 11 to 14. In this district, there were four ways by which GT students were identified: Intellectual Ability/Academic Aptitude, Creative/Productive /Divergent Thinking, Leadership Abilities, and Visual Performing Arts. Within intellectual ability/academic aptitude, students could be identified as gifted within certain academic areas including math, reading/writing, and reading/writing/math, or as general intellect. Students who did not have a cognitive ability score in the gifted range but performed exceptionally well in one of the academic areas identified above were labeled as academically gifted in a specific academic area. In this school, teachers of students identified as GT in their area (e.g. math, reading, performing arts) were required to write an Advanced Learning Plan for each identified student. The district's website indicated that the plan must include at least one academic goal in the identified area of strength, at least one affective goal, and programming must be identified to help the student meet these goals. Ideally, plans were written in collaboration with parents and students in order to ensure appropriate and relevant goals. Students in this school were also invited to a bi-yearly event for GT youth.

Participants in this study represented a convenience sample and were recruited from one middle school. Recruitment strategies included emails to parents of GT students that contained information on the study. In the email that was sent to parents (Appendix B), a cover letter as well as the informed consent and assent (Appendix C-E) documents were included so that parents could print these out, sign, and give to their child to bring to school. Additionally, the researcher attended a school event targeted towards the GT program and introduced the study directly to students. All middle school students in this specific middle school who were receiving gifted programming met inclusion criteria.

To obtain the necessary minimum sample size, the researcher conducted an a priori power analysis through G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). In order to conduct a G*Power test, there are various pre-specified inputs that need to be determined, including significance, effect size, and power (Cohen, 1988). In this study, the significance level was an α of .017. This higher than usual cutoff for significance was used because data analyses included three different tests (one for Self-Prescribed Perfectionism, one for Socially Oriented, and the mindfulness measure) on the same subjects, indicating that a Bonferroni adjustment was necessary. As such, the desired alpha was divided by the number of tests. The most standard significance level for behavioral sciences (Privitera, 2015) is .05; thus, the alpha entered into G*Power was .017. An effect size of .25 was chosen for this study because it falls in the moderate range. Finally, the power was set at .8, the recommended level for tests in the behavioral sciences (Cohen, 1988).

A conservative estimate of the correlation between measures was .6, as test-retest reliabilities for Socially Prescribed Perfectionism and Self-Oriented Perfectionism were .59 and .65, respectively (Flett et al., 2016). The test-retest reliability for the CAMM has been found to be .72 at two weeks and .58 after three months in French-Canadian samples (Dion, Paquette, Daigneault, Godbout, & Hébert, 2018). As there were no known studies of test-retest for U.S. samples, a conservative estimate of .6 was deemed appropriate for this measure. The number of groups was set at one, as there was just one intervention group, and the number of measurements was set at three, for the pre-test, the post-test, and the follow-up. Once these numbers were entered into G*power's MANOVA: Repeated Measures, within factors test, the suggested sample size was 31.

Though the intervention was relatively short and fit within a semester, the likelihood of every student attending every session was unlikely. Therefore, the desired sample size was set at 35 to 40 participants to increase the likelihood of sufficient subjects even if 15% dropped out or missed too many sessions. Other studies examining mindfulness included participants attending at least 80% of the intervention days (Crowley et al., 2018; Fung et al., 2016), thus all students who attended at least five of the six sessions were included in the final analysis.

Instrumentation

Participants completed a demographic questionnaire (see Appendix F) including grade and gender. Information on the type of gifted programming each child was receiving was obtained from the registrar. Participants completed two standardized measures, the CAPS and the CAMM, to obtain ratings of perfectionism and use of mindfulness techniques at three distinct points: before the intervention, right at the end of the intervention, and at follow up.

Child-Adolescent Perfectionism Scale

Levels of perfectionism were measured using the Child-Adolescent Perfectionism Scale (CAPS; Flett et al., 2016; See Appendix G). The CAPS is a 22-item, norm-referenced test for children aged 6-18 based on the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991), which measures perfectionism in adults. Items on this instrument are divided into two scales: Self-Oriented Perfectionism (SOP) and Socially Prescribed Perfectionism (SPP). All 22 items are scored on a 5-point Likert scale from 1 to 5 with 1 being “False, not at all true of me” to 5, “Very True of Me” (Flett et al., 2016). Three items are reverse-coded. Scores for each scale range from 11 to 55, with

high scores indicating greater levels of perfectionism. To score the measure, responses to each question were summed, with the necessary items reverse coded.

The original version of the CAPS existed in an unpublished manuscript on the Perfectionism and Psychopathology Lab website at the University of British Columbia (Flett, Hewitt, Boucher, Davidson, & Munro, 2000). Along with the instrument, normative data as well as the scoring guide were provided. Because of this availability, the instrument has been used in numerous other studies (e.g. Flett et al., 2011; O'Connor et al., 2009) even though it was not formally published until 2016 (Flett et al., 2016). The CAPS provides norms for the SOP and SPP scales separately. Mean scores and standard deviations for children aged 6 to 12 are 31.45 and 8.46, respectively, for SOP, and 25.59 and 8.66 for SPP. For adolescents aged 13-18, the respective means and standard deviations are 29.38 and 8.34 for SOP and 25.80 and 8.57 for SPP. As noted, higher scores are indicative of increased levels of perfectionism.

Reliability of the CAPS was determined to be adequate with the standardization sample that included 247 Canadian children and adolescents (grades 3-12), with a Cronbach's alpha of .85 for SOP and .81 for SPP (Flett et al., 2016). Test-retest reliability of the original scale was $r=.74$, $p<.01$, and $r=.66$, $p<.01$, for SOP and SPP, respectively, over a five-week interval (Flett et al., 2000). After one year, the test-retest reliabilities were .65 and .59 (Flett et al., 2016). Internal consistencies for the combined clinical and non-clinical Canadian samples (elementary and high school age; mean of 13.45) were .81 for Self-Oriented and .84 for Socially Prescribed. Flett and colleagues (2016) also included samples from other countries (e.g. Russia, Israel) using translated measures to examine internal consistencies. In the sample of 218 Chinese students (mean

age=12.119), Self-Oriented Perfectionism had an internal consistency of .71 and Socially Prescribed an alpha of .68. In the sample of 153 Russian students (mean age = 15.00), SOP had an internal consistency of .68, and SPP was found to be .77. The reliability level with this sample was consistent as the Cronbach's alpha for SOP was .87 for SOP and .88 for SPP.

Adequate concurrent validity ($r=.64$, $p<.01$) was also obtained when comparing scores between the CAPS-SOP and a measure of personal desire for perfection from the Academic Reasons Survey (Ryan & Connell, 1989). Students in this study were 98 high school students, with a mean age of 16.63 years. Other studies compared the CAPS to perfectionism measures on the Eating Disorder Perfectionism Scale and found correlations between CAPS-SOP to be .41 for females and .72 for males (Flett et al., 2016). Participants in this sample were 131 high school students with a mean age of 15.96. For CAPS-SPP, the correlations were .45 for females and .55 for males. Though these correlations are not exceptional, they are adequate for research purposes. In addition, a review of current measures of perfectionism for children and adolescents found the CAPS to be appropriate (Leone & Wade, 2018).

Child and Adolescent Mindfulness Measure

Levels of mindfulness were measured using the Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011; See Appendix H). The CAMM is a 10-item screener for children and adolescents aged 10 to 17. Items are scored 0-4 and measure how often statements are true or false for a student, with a zero being "never true" and a four being "always true." All items are reversed coded, thus when scoring, items are reversed such that the higher number corresponds with higher levels of

mindfulness (Greco et al., 2011). The CAMM has a mean score of 22.73 and a standard deviation of 7.33. In a sample of 562 adolescents aged 12 to 15 years, internal reliability was demonstrated to be adequate, with a Cronbach's alpha of .84 (Kuby, McLean, & Allen, 2015). In the same sample, convergent validity was displayed with correlations between the CAMM and measures of psychological functioning and distress, including a correlation of .54 with the Penn-State Worry Questionnaire for Children (Chorpita, Tracey, Brown, Collica, & Barlow, 1997) and a correlation of .46 with the total score on the Strengths and Difficulties Questionnaire (Goodman & Goodman, 2012). In a separate sample of 319 students aged 10-17, a Cronbach's alpha of .81 was obtained (Greco et al., 2011). Test-retest reliability was unfortunately not found in a study from American populations, though in a French-Canadian sample, test-retest reliability was .72 after two weeks and .58 after three months (Dion, et al., 2018). The current study with GT middle school students found a Chronbach's alpha of .83.

Procedures

Prior to participant recruitment, approval was obtained through the school district as well as through the University of Northern Colorado's Institutional Review Board (IRB; see Appendix A). After all permissions were received, participants were recruited via an email home describing the curriculum to both parents and students, to obtain a preliminary sample. This email detailed the purpose of the assessment, as well as rationale for allowing their child to attend a six-week course. The next week, the researcher presented on the study briefly during the GT event at the middle school and started collecting parent consent and student assent forms from students. Once the desired number of students (35-40) were obtained, and after the school district's mandatory start

day for research (October 1), the researcher implemented the mindfulness intervention, Learning to Breathe (Broderick, 2013).

Five weeks after completion of the program, participants were again asked to complete both the mindfulness and perfectionism measures. The researcher knew of the district through a previous field experience but was not familiar with any students in the study from previous experiences in the school.

The intervention took place one day per week during “core plus” classes (i.e. classes such as music, art, and technology). As such, participants missed one core plus class per week for six weeks. The exact class they missed alternated each week such that students only missed three of each core plus classes. Teachers were informed of students’ group participation prior to the intervention. Prior to the start of each session, participants were expected to go to their core plus class to obtain any necessary materials for the day and be checked in for attendance. Passes were laminated for the students to bring from their specials teacher to the classroom reserved for the group. The researcher tracked attendance such that any participation above 30 minutes was considered present for the whole session. Sessions were designed to be approximately 45 minutes long, and given that classes were 55 minutes long, this gave adequate time for students to go to class for five minutes, obtain materials, and be ready to start the intervention 10 minutes into the class time. Given that each grade had core plus classes at different times, there were three groups per day, with students grouped by grade (6th grade = 15 students, 7th grade = 17, 8th grade = 10). This enabled smaller sized classes and was designed to encourage more participation.

The intervention, Learning to Breathe (Broderick, 2013), is a 6 to 18-week mindfulness course based in MBSR and designed specifically for adolescents in a school system. It is one of only four mindfulness programs that met the research criteria established by CASEL for an effective intervention (CASEL, 2015). Although Learning to Breathe can be delivered over a longer time period with shorter sessions, the six-week curriculum was used for this study and each lesson is 45 minutes. The six-week curriculum was chosen for the current study as the author noted its efficacy for older adolescents or those who are mature enough to manage 45-minute sessions. Additionally, given that students were being pulled from their classrooms, fewer sessions were deemed appropriate by administration.

Each week of the course was designed around one of the first six letters of BREATHE (i.e., Body, Reflections, Emotions, Attending, Tender, Habit), with the seventh letter (e) standing for the overall goal of empowerment (Broderick, 2013). Each week started with a preview and presentation of the theme of the day, then youth took part in activities related to the theme, and finally, each lesson ended with an in-class mindfulness practice. Although scripts were provided, Broderick (2013) emphasized that as long as the lessons follow what should be taught, using precise wording was less important. The six themes are listed in Table 1.

Table 1

Themes and sample activities from Learning to Breathe (Broderick, 2013)

Theme	Sample Activities
Listen to your B ody	Mindful listening, mindful eating, mindful walking.
Acknowledge your thoughts (R eflections)	Examining mindfulness of thoughts, exploring inner speech, discussing futility of thought suppression.
Identify, understand, and experience your E motions	Normalizing experience of all emotions, connecting emotions to body and thoughts, sitting with boredom.
Reduce stress through A ttending to your body, thoughts, and emotions	Identifying stressors, discussing outcomes of juggling multiple tasks simultaneously, mindful movements and positions.
Be kind (T ender) to yourself	Examining self-care, making self-care goals, loving-kindness meditations.
Make mindfulness a H abit	Summarizing all previous weeks, mindful listening and speaking.

The researcher, who was familiar with the school having worked in the building the year before (though not with the GT students), guided each lesson. Students were given “homework” as part of the curriculum, in order to practice what they had learned at home. Each student was also given a workbook, as provided through the intervention, in which they could complete activities, write a journal, and keep track of learned skills. Students were asked to raise their hand if they had practiced mindfulness at any point during the week at the beginning of each session in order to encourage practice; however, homework was not monitored formally.

The researcher collected data at three points during this study. The first data collection occurred prior to the start of the intervention, before they were presented with

any curriculum from the program. Students were also given the same measures immediately following the final intervention, on the same day as their last session. If a student was absent for the first day or final day, and they had not missed any other sessions, the survey form was given to them as soon as possible. In the instance of the first session being the only one missed, the researcher gave the individual the forms to be filled out immediately prior to the start of the second week's intervention. Follow up data were collected five to six weeks after the intervention ended. For the final data collection, students were given passes to come down to the counseling office during their first-hour class.

Research Design

Three one-way, repeated measures, within factors MANOVAs were completed: one on Self-Oriented Perfectionism, one on Socially Prescribed Perfectionism, and one on the levels of mindfulness. In this type of MANOVA, the independent variable (IV) was the group itself: Gifted and Talented middle school students; and the dependent variables (DVs) were the three measures of time. In other words, the outcome variables were perfectionism and mindfulness before, immediately after, and at the five-week follow-up. Repeated-measure MANOVA procedures were considered to be the best statistical test for these data because they account for correlational relationships between dependent variables (Tabachnick & Fidell, 2007). Any significant reduction in scores was considered indicative of a functional intervention.

Data Analysis

Descriptive statistics were conducted on the demographic variables: student's self-reported age and gender, and the type of GT programming (obtained from the

school). Formal tests of potential assumption violations were conducted prior to completing any statistical comparisons. Three one-way, repeated measures, within factors MANOVAs were completed: two on the subscales of the CAPS and the other on the CAMM. Due to using the same individuals across three measures, the alpha level necessary to achieve significance was $p < .017$ using the Bonferroni adjustment, in order to reduce type I error. Pairwise comparisons were then analyzed to see whether there were significant differences were between time points (i.e., pre-, post-, and follow up). Results were analyzed using IBM's SPSS 24 to ascertain whether participants reported lower levels of perfectionism as measured by the two scales of the CAPS and higher levels of mindfulness as measured by the CAMM, across the three time points. Specifically, Time 1 (pre-intervention) was compared to Time 2 (post-intervention) and then Time 1 was compared to Time 3, to see if there were significant effects across these different time points.

CHAPTER IV

RESULTS

This chapter presents the results of the analyses on whether a six-week mindfulness intervention significantly impacted scores on Self-Oriented and Socially-Prescribed perfectionism as well as on a measure of mindfulness. The participants were gifted and talented middle school students in a Western state. Demographic information, missing data analyses, assumptions testing, as well as the full results of the analysis are included.

Data Preparation

Demographics

Overall, 45 participants completed the mindfulness groups. No students dropped out or failed to attend five of the six sessions. However, three students were not included in the final analysis due to their not being officially part of the Gifted and Talented program (no labeled category) by the time the data were analyzed. Thus, the corrected total number of participants was 42. Means and standard deviations were obtained to visually analyze for differences between gender, grade, and type of giftedness (including specific aptitude label). Table 2 contains the means and standard deviations for the initial results of each test by demographic category, including both overall academic label (Combined Academic), and the specific subcategories of academic giftedness (e.g. reading, writing). Visual inspection of the means suggested that there were not any

significant differences across groups based on demographic differences, with the possible exception of Gifted Type and Self-Oriented Perfectionism (SOP). A post-hoc ANOVA was performed and found a significant difference on Gifted Type on Time 1: SOP, $F(1, 33) = 5.00, p = .03$. This analysis compared the SOP of participants identified as Intellectual Giftedness with those identified with one type of academic giftedness (Combined Academic). Given that there was only one student identified as Creative, and this student had items missing in self-oriented perfectionism, this data point was not included in the analysis. The differences suggest there may be an impact of type of giftedness on self-oriented perfectionism.

Table 2

Number and percentage of individuals in each demographic category

Demographic Category	<i>n</i>	%	SOP <i>M</i> (<i>SD</i>)	SPP <i>M</i> (<i>SD</i>)	CAMM <i>M</i> (<i>SD</i>)
Gender					
Male	22	52.4	40.52 (8.50)	27.65 (8.19)	21.14 (7.07)
Female	18	42.9	42.35 (7.57)	28.83 (7.44)	18.39 (7.99)
Other	2	4.8	38.00 (7.97)	15.00 ()	14.00 (5.66)
Grade					
6	15	35.7	42.29 (7.20)	29.33 (7.81)	22.00 (7.96)
7	17	40.5	39.94 (9.16)	27.81 (7.90)	19.06 (6.96)
8	10	23.8	41.77 (7.05)	25.25 (8.63)	17.00 (7.38)
Gifted Type					
Creativity	1	2.4	50.00 ()	21.00 ()	19.00 ()
General Intellect	10	23.8	45.50 (7.22)	28.67 (8.00)	20.00 (6.77)
Combined Academic	31	73.8	39.44 (7.90)	25.83 (7.50)	19.52 (7.95)
Math	6	14.3	43.00 (11.24)	27.33 (11.31)	19.00 (10.92)
Reading/Writing	8	19.0	37.57 (5.68)	27.88 (5.79)	19.13 (2.30)
Reading/Writing/Math	17	40.5	38.81 (6.84)	28.07 (8.27)	19.88 (8.87)

Note: Standard Deviations for groups of one cannot be reported.

The total means and standard deviations for each measure were computed. It was interesting to note that the sample in this study had an SOP score that was greater than one standard deviation higher than that of the norm group as reported in Flett et al. (2016). The mean score on the CAMM was slightly lower (19.62 as compared to the reported mean of 22.73 for the CAMM). Means and standard deviations can be found in Table 3.

Table 3

Means and standard deviations for SOP, SPP, and CAMM at Time 1

Measures	<i>n</i>	<i>M</i>	<i>SD</i>
SOP	35	41.00	8.00
SPP	32	25.88	7.32
CAMM	42	19.62	7.51

Missing Data Procedures

Less than one percent of the overall data was missing. To ascertain whether there was a pattern, Little's MCAR (Missing Completely at Random test) was performed. The results were not significant: Chi Square = 361.559, $df = 339$, $p = .191$ suggesting there was no pattern to the missing data, and thus no imputation was necessary. If two responses on a specific measure were circled, an average of the items was taken and input to SPSS for that item, an event that occurred six times.

Assumption Testing

There were numerous assumptions that needed to be met prior to analyzing these data. First, the Shapiro-Wilk test of multivariate normality was conducted on each of the totals for SOP, SPP, and CAMM at each time point (nine tests included), and all were nonsignificant, suggesting that it would be appropriate to conduct a multiple regression with these data. Second, Levene's Test of Equality of Error Variances was run on the

three variables. SOP passed the assumption of equality ($F = .931, p > .05$), as did SPP ($F = .079, p > .05$) and the CAMM ($F = 2.00, p > .05$). The assumption of linearity was assessed through visual analysis. There were no outliers beyond three standard deviations for any of the three variables. There was one outlier that was close in the CAMM, but this individual had scored a 0 on the total amount of mindfulness for the initial data collection. Regarding patterns of data, the only pattern noted were some vertical lines of data, however this could be explained by the fact that individuals could only score within a limited range (i.e. 1-5) for each item. Visual analysis of QQ plots also found no observable patterns.

To assess for Equality of Covariances, a Box's M test was completed, $F = .957, df = 12, p > .001$, and it was non-significant. There were no correlations between variables that were above .9 thus it passed the assumption of the absence of multicollinearity (see Table 4). Finally, almost all of the data passed the assumption of the absence of multivariate outliers. There was one multivariate outlier at time point three that was .71 above the cutoff for Mahalanobis Distance, however because it was just one person and they were close to the cutoff point, it was deemed appropriate to retain this individual.

Table 4

Correlations between variables

	SOP	SPP	CAMM
SOP	-		
SPP	.533**	-	
CAMM	-.201*	-.230*	-

** $p < .01$. * $p < .05$.

Research Questions

- Q1 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly lower levels of reported Self-Oriented Perfectionism after completion of the program and at a five-week follow-up?

To address this question, a one-way repeated measures MANOVA was conducted on the data. The hypothesis stated that self-oriented perfectionism should decrease after the six-week intervention, and results should maintain through the follow-up. The results of the intervention did support this hypothesis; Wilk's $\Lambda = 0.680$, $F(2, 33) = 7.76$, $p = .002$, $\eta^2_p = .32$. According to the work of Richardson (2011), partial eta-squared (η^2_p) measures of effect size are categorized at the following levels: small = .0099, medium = .0588, and large = .1379. Results from this test indicated a large effect of time on measures of SOP. Pairwise comparisons between the time points were obtained using a Bonferroni adjustment, showing significant differences between the pre-test and the post-test as well as between the pre-test and the follow-up. For more detailed information, see Table 5 and Figure 1.

Table 5

Pairwise comparisons between time points for SOP

Time Point Comparison		Mean Difference	Significance	95% CI
Time 1	Time 2	3.73	.004	1.05 – 6.40
	Time 3	3.89	.004	1.08 – 6.69
Time 2	Time 3	.16	1.000	-.29 – 2.81

Note: CI = Confidence Interval

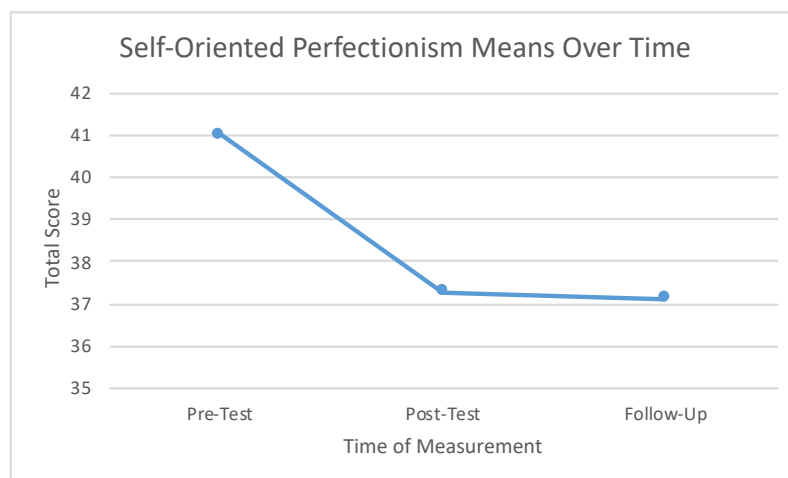


Figure 1. Mean score of SOP at all three time points.

- Q2 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly lower levels of reported Socially Prescribed Perfectionism after completion of the program and at a five-week follow-up?

It was predicted that there would be a significant negative effect of the mindfulness intervention and levels of socially-prescribed perfectionism when performing a one-way repeated measures MANOVA. The results, however, did not support this hypothesis and there were no significant differences between the pre-test, post-test, and follow-up: Wilk's $\Lambda = 0.852$, $F(2, 31) = 2.581$, $p = .083$, $\eta^2_p = .148$. No pairwise comparisons were necessary due to the failure to obtain significance.

- Q3 Do GT middle school students who participate in an evidence-based mindfulness program demonstrate significantly higher levels of reported mindfulness after completion of the program and at a five-week follow-up?

A one-way repeated measures MANOVA was performed to ascertain whether the participants reported higher levels of mindfulness behaviors after participating in the group and several weeks later. It was hypothesized that the levels of mindfulness would increase significantly from baseline and would be maintained at follow up. According to

the analysis, there was a significant difference based on the time points on levels of mindfulness; Wilk's $\Lambda = 0.582$, $F(2, 40) = 14.352$, $p = .000$, $\eta^2_p = .418$. The partial eta-squared indicated that the effect size was large. Pairwise comparisons were then completed to ascertain whether there were significant differences at each time point comparison (Table 6). As expected, there were significant differences between Time 1 and Time 2 and Time 1 and Time 3, but not between Time 2 and 3, suggesting that participants continued to report higher levels of mindfulness at follow up. Figure 2 shows the change in mindfulness over time. Finally, there was a correlation between mindfulness and both measures of perfectionism with levels of mindfulness inversely related to levels of perfectionism (see Table 4).

Table 6

Pairwise comparisons between time points for CAMM

Time Point Comparison		Mean Difference	Significance	95% CI
Time 1	Time 2	-4.02	.001	-6.19 – -1.86
	Time 3	-4.44	.000	-6.10 – -2.79
Time 2	Time 3	-4.17	.584	-1.939 – 1.11

Note: CI = Confidence Interval

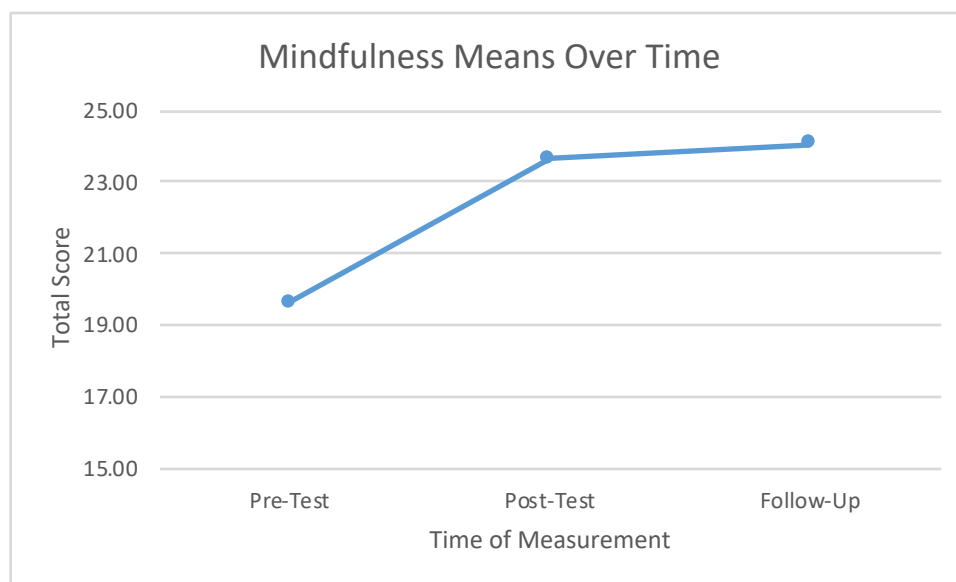


Figure 2. Mean score on the mindfulness measure at all three time points.

Overall, results were largely as predicted in the hypothesis, with the exception of a failure to achieve significance with SPP. Not only were there significant impacts of the intervention on levels of SOP and mindfulness, these results had a large effect size, indicating that much of the variance in scores between time points could be attributed to the intervention. Further, for both SOP and CAMM, scores were significantly different between the pre-test and post-test, as well as between the pre-test and follow-up. As there were no significant differences between the post-tests and follow-ups, these patterns suggest that the impact of the intervention continued for at least the five-week period after the intervention ended. Overall, this study strengthens the evidence base for mindfulness interventions as an intervention to reduce perfectionism among middle school students who are GT.

Ad-Hoc Test for Mediation

A structural equation modeling path analysis was performed using the statistical language R (R Core Team, 2013) and the Lavaan and SEM packages. The mindfulness measure on the post-test was examined as a mediator for differences between pre-SOP

and post-SOP. The indirect path using pre-SOP to mid-CAMM was not significant ($\beta = -.01, p = .67$). Though these results were non-significant, the coefficient was negative, indicating the correct direction. Additionally, the sample size was quite small for this type of analyses (Lei & Wu, 2007).

CHAPTER V

DISCUSSION

In our high-pressure society, perfectionism has been demonstrated to be a growing problem among youth (Curran & Hill, 2017), which may contribute to the rates of anxiety (Gnilka et al., 2012), depression (Reyes et al., 2015), and eating disorders (Bardone-Cone et al., 2007), among others. This study examined the impact of a mindfulness intervention on self-ratings of perfectionism among GT middle school students. It was expected that students who used mindfulness would experience fewer maladaptive cognitions, including their own self-oriented thoughts as well as their beliefs around the expectations of others. The purpose of this study was to evaluate whether after participation in a 6-week mindfulness intervention, participants reported significant changes in their levels of SOP and SPP. As a secondary purpose, the researcher wanted to determine whether these participants reported increased levels of mindfulness. This chapter discusses outcomes from the study including findings, implications, limitations, and areas of future research.

Summary of Findings

Impact of Mindfulness on Self-Oriented Perfectionism

Current results indicated that GT middle school students reported a significantly lower level of SOP after participating in the intervention. This finding suggests that a mindfulness intervention may be an appropriate choice to help adolescents who are GT in

terms of their internal pressure to be perfect. Not only did participants report lower levels of SOP after participating in group, their reported level of SOP remained lower at the follow-up. This finding indicates that the lower levels of perfectionism obtained after the mindfulness curriculum was implemented held for several weeks after the intervention had concluded. In fact, prior to the intervention, a significant negative correlation between levels of SOP and mindfulness was noted, indicating that those using more mindfulness are likely engaging in less perfectionistic thinking and behavior. Additionally, participants rated themselves on average more than one standard deviation above the reported norms in the area of SOP supporting previous research suggesting that GT youth may be particularly prone to this type of perfectionism, and thus intervention with this group specifically is warranted.

In other studies of mindfulness, adolescent populations reported positive changes after participating in different types of mindfulness interventions, such as decreases in anxiety (Felver et al., 2016), externalizing behaviors (Fung et al., 2016), and an increased ability to manage stress (Zenner et al., 2014). The current study also provided support for a positive benefit of practicing mindfulness in that participants reported lower levels of perfectionistic thinking and behavior. After all, as Flett and Hewitt (2014) succinctly stated: “In many respects, the perfectionistic lifestyle seems in opposition to a mindful approach to life that includes a focus on being rather than doing and experiencing life in the here-and-now rather than doing things and always striving” (p. 908). In fact, the significant negative correlation between perfectionism and mindfulness was supported in this study. Additionally, mindfulness may be a particularly well-suited intervention for perfectionism due to the ability for mindfulness to reshape cognitions as well as to enable

self-regulating by directing one's attention to the present (Greeson, 2009; Sharp et al., 2017).

The current study with adolescents identified as GT showed that after participation, they rated themselves as having significant lower levels of self-imposed perfectionism. It is possible that by helping youth to notice and accept their cognitions, emotions, and somatic experience without judgement, they may have learned to apply their newfound non-judgmental frame of mind to their perfectionistic cognitions. Indeed, these results were consistent with the limited studies establishing that higher levels of mindfulness can be correlated with lower levels of perfectionism (Hinterman et al., 2012) and that mindfulness interventions were correlated with a decrease in perfectionism (James & Rimes, 2018).

The findings of this study were consistent with those of Mofield and Chakrabarti-Ghosh (2010) who found that GT adolescents who participated in a group that focused on relaxation techniques reported positive outcomes. In their study, participants completed a 6-week affective curriculum that did not focus on mindfulness but did include relaxation techniques as well as a discussion of the impact of perfectionism on students' mind, body, and relationships. Similar to the current study, Mofield and Chakrabarti-Ghosh (2010) found that unhealthy perfectionists had decreased elements of perfectionism (specifically, concern over mistakes) after the intervention.

When participants were asked to share how the mindfulness intervention impacted their experiences, many students endorsed that learning mindfulness gave them strategies to manage their anxieties and stressors as well as gave them a forum to share experiences with other GT students. Notably, a parent of one of the participants approached the

researcher and noted that her son now was able to use a shared vocabulary to describe his state of mind. She explained how he was more willing to acknowledge when elements of his life were stressful or anxiety-provoking. These qualitative observations lend credence to the idea that mindfulness interventions with GT students can help students acknowledge their present state of mind and have more tools for managing the stressors in their lives.

Impact of Mindfulness on Socially-Prescribed Perfectionism

Another type of perfectionism is defined as the pressures that individuals believe are being imposed on them by others and is termed socially-prescribed perfectionism (SPP). For this type of perfectionism, no significant findings were identified either at the end of the intervention or several weeks thereafter. This finding was similar to the study by Mofield and Chakraborti-Ghosh (2010) in which no significant differences were found on the aspects of perfectionism related to others such as parents. It is possible that these perceived external pressures are not malleable to change. In other words, just because the students were provided with strategies to manage their own anxieties and understand themselves better did not mean that they would experience fewer pressures from meaningful adults in their lives (e.g., parents, teachers, peers) whether real or perceived.

It is also important to note that participants in this study did not reported elevated SPP levels. Therefore, they may not have experienced perceived pressure from others as creating any type of distress and therefore, there was no real need for change. However, it was interesting to note that socially-prescribed perfectionism was significantly negatively correlated with mindfulness, even when it was in the typical range. Thus, it may be that

elements related to mindfulness such as acceptance of the present moment may allow young adolescents to minimize the impact of parental or teacher pressure to succeed.

Impact of Intervention on Mindfulness

As expected, participants reported significantly higher levels of mindfulness practices after participating in the intervention and several weeks afterwards. These findings seem to suggest that the intervention was successful at helping GT middle school students engage in a greater number of mindfulness practices. Student participants were able to learn mindfulness skills through the six weeks of intervention, and these skills were maintained for a period of time after the intervention concluded.

Overall, this was an expected result as other studies focusing on teaching mindfulness to youth have also resulted in significant increases of mindfulness (e.g. Bernay, Graham, Devcich, Rix, & Rubie-Davies, 2016; Galla, 2016; Viafora, Mathiesen, & Unsworth, 2015). For example, Galla (2016) found that an intensive five-day mindfulness retreat with adolescents not only significantly improved mindfulness immediately following the retreat but was retained during the three-month follow up. Although this study only followed participants for approximately five weeks, it appears that mindfulness gains may be sustained much longer following an intervention.

Furthermore, the results of this study advanced the utility of Learning to Breathe curriculum (Broderick, 2013) as an effective intervention for adolescents. Previous studies such as that by Metz and colleagues (2013) focused on emotion regulation, psychosomatic complains, and perceived stress and found positive results after participation. Studies have also found this intervention increases metacognitive awareness (Broderick & Jennings, 2012) and decreases depression (Bluth et al., 2016).

The current findings suggest that mindfulness can also be helpful in reducing negative thoughts and pressures placed on oneself.

Implications

Although there are aspects of perfectionism that can be viewed positively, some scholars have suggested that adaptive perfectionism may turn into maladaptive at any point (Flett & Hewitt, 2015). Interventions that address perfectionism in youth are important, yet there has been limited research into these interventions and more specifically the application of mindfulness to perfectionism (Morris & Lomax, 2014), regardless of the population. This study furthered our knowledge of the efficacy of a mindfulness intervention for perfectionism among youth who are GT.

Gifted students have long been identified as a population that may experience higher than average rates of perfectionism, with both quantitative and qualitative research indicating needs in this area (Adelson, 2007; Chan, 2011; Guignard et al., 2012; Rimm, 2007). This study suggested that after participation in a manualized and specific intervention such as Learning to Breathe (Broderick, 2013), GT youth reported lower levels of self-imposed perfectionism.

Although the current study did not examine differences between gifted and non-identified populations, it was interesting to compare the means from the perfectionism measure in non-clinical populations to the means observed in this sample. On the measure of internal pressure to succeed (i.e. SOP), the average scores of students in this study were almost ten points higher at baseline than the average scores from the normative sample of similarly aged peers (Flett et al., 2000). This may indicate that the high expectations GT students place on themselves in this school may be greater than the

general population and would be consistent with the body of work that has suggested gifted youth are more likely to experience perfectionism than their non-identified peers (e.g., Baker, 1996; Chan, 2011; Guignard et al., 2012). Conversely, when examining the impact of perceived need for perfection by others in their lives, the ratings from participants in this study were almost the same as the population mean. It may be that self-imposed expectations are much more salient for youth who are gifted than any type of pressure exerted by others in their lives.

This study follows other research wherein presence of mindfulness has been shown to be correlated with lower levels of perfectionism (Hinterman et al., 2012; James & Rimes, 2018). Particularly interesting to note was the fact that scores on both measures of perfectionism were significantly negatively correlated with mindfulness before any intervention was performed. This held true for areas where students displayed average rates of certain types of perfectionism (socially prescribed) and when they displayed above average rates (self-oriented).

One notable difference between past studies and the current one was the age of participants in this study. This study included a much younger population than previous studies, yet still demonstrated the potential effectiveness of this type of intervention. The current results provide preliminary support to the use of mindfulness programming for students in middle school and suggest reductions in perfectionism through this type of programming can be found in younger adolescent populations. This is particularly salient when considering that middle school students are in a developmental stage rife with changes and may be struggling with accepting themselves (Roeser & Pinela, 2014). Therefore, interventions that promote acceptance of current states and being present in

the moment are ideal for this age. Practitioners should consider mindfulness interventions in the future when working with younger adolescents. Indeed, even classroom teachers could incorporate mindfulness lessons into their curriculum, particularly as mindfulness may be done in short, concise segments.

Previous research has rarely looked at using mindfulness with GT populations and studies that have examined the impact of mindfulness quantitatively with this population are even more scarce. Using qualitative methodology, researchers found that GT students reported increased calmness and heightened awareness (Haberlin & O'Grady, 2018) as well as the use of mindfulness skills in other settings (Doss & Bloom, 2018) after participating in mindfulness interventions. Results from the current study suggest that mindfulness curricula can affect change in GT populations, including both in increasing mindfulness and in reducing levels of perfectionism. Ultimately, given the need for interventions related to perfectionism in GT populations, and the call for mindfulness to be used with these populations (Sharp et al., 2017), the findings of this study supports the promise of this type of programming.

Moving forward, practitioners may want to consider that GT students tend to experience higher rates of perfectionism more so than their non-identified counterparts, particularly with an internal pursuit of flawlessness. Teachers and GT coordinators should consider social-emotional interventions within GT programming that could address some of these negative cognitions and emotions. Mindfulness in particular has been demonstrated to be well-suited to the needs of GT students. With its demonstrable success across diverse areas of well-being, it should be considered an apt intervention to be incorporated into programming for youth. Additionally, given that mindfulness has

been correlated with positive outcomes across domains and the fact that some states already require GT youth to have an affective goal, creating goals around mindfulness may be particularly salient for this population.

Limitations

This study was not without its limitations. Most importantly, due to logistical constraints, there was no control group. This means that there may have been external factors impacting the scores that were unrelated to the reported decreases in perfectionism and/or increases in mindfulness. It is possible that students without the intervention may have experienced a similar decrease in perfectionism, especially as the winter break approached. The pre-test occurred in early October, the post-test in early November, and the follow-up was completed a few weeks before an expanded break. It is possible that all students were experiencing a reduction in their perfectionistic ideas that happened to correspond with the timing of the follow up (e.g., excitement about an upcoming vacation). It was also difficult to know what specific aspect of the intervention may account for the changes. Participants were able to engage with other youth who are gifted, received extra attention from the researcher, and had a weekly break from their classes. It is possible that any one or a combination of these factors contributed to the lower ratings of perfectionism and without another type of control group that would share some of these features (e.g., study group with gifted peers), it is difficult to determine why the ratings changed. This possibility is particularly salient given the post-hoc mediation analysis, which did not find significance for the impact of mindfulness scores on ratings of perfectionism. A study that has a larger sample size may be able to increase the power and potentially enable this mediation to be observed.

Another limitation was the population itself in that students were drawn from a school that has high standards for all of its students because it is an International Baccalaureate school. Since all students came from this one school, it is possible that students experienced greater pressure to perform and the generalizability of these findings may be limited. Further, the majority of participants were from White, middle class backgrounds.

Response bias presents a limitation in that families who opted into the study may already have believed in the efficacy of mindfulness. Finally, there may be social bias in the responses of the students; they may have wanted to prove that their levels went down because by that point they were familiar with the researcher and may have wanted to respond in more positive ways. In this study, students were asked to fill out surveys measuring perfectionism by the researcher. Although efforts were made to make sure that the researcher would not be watching or that the ratings would not be readily visible, it is still possible that this presence affected ratings. As Jackson and Peterson (2003) noted, GT student's advanced intellect may make them more capable of adjusting their answers according to their perception of the needs of the test.

Future Directions

Overall, by finding an intervention that achieved significant results in lowering specific areas of perfectionism in GT adolescents, it opens the door to potential programming that may help them to develop important skills across their lifespan. However, because of the limited generalizability of these findings, it would be important to replicate with more diverse samples of youth who are identified as GT. Additionally, it would be important to include a control group with random assignment that offered a

similar format (e.g., 45 minutes a week, opportunity to meet with peers) so that the potential effects of the program could be separated from other aspects of the intervention setting. This methodology would allow for stronger conclusions regarding the effectiveness of mindfulness in reducing levels of perfectionism.

This study found that after GT youth participated in a mindfulness intervention, they reported reduced levels of self-oriented perfectionism. However, given the sample size and study design, it was not possible to explore the precise mechanism of change. Future research could examine the cognitions of the students more explicitly and ask the question: *how* does mindfulness change the cognitions of students? What is it about mindfulness that makes it an effective intervention for perfectionism? Finally is it the level mindfulness itself that serves as mediator for these positive outcomes or something else entirely?

Another element that presents opportunities for future research is potential differences of Gifted Type on levels of Self-Oriented Perfectionism. Although there was a small sample size in this study, it was noted that those students who were identified as intellectually gifted had higher levels of SOP at the start of the intervention as compared to their GT peers who had been identified as academically gifted. Future research could examine whether, for example, students who experience giftedness across domains (i.e. are intellectually gifted) have greater levels of perfectionism and respond to interventions such as mindfulness differently than gifted students who are identified with a more specific type of giftedness (e.g. academically gifted, creative, leader).

Future studies could also inquire as to the impact of mindfulness interventions on perfectionism for youth who are identified under different types of GT as well as their

peers who are not identified as gifted but are experiencing high levels of perfectionism. Further research could include completing the same intervention with both GT and non-identified students to determine whether mindfulness interventions have different levels of effectiveness across samples. It may be that all students with elevated levels of perfectionism could benefit from a mindfulness intervention, but it would be particularly interesting if this was an intervention that was more successful with GT youth.

Finally, there were important qualitative elements that could have been included in this study, such as the responses of students to the intervention, the experiences of parents, and the observations of teachers. A future study could use a mixed-methods design to include the qualitative experiences of the stakeholders involved. Overall, this study opens the door to a variety of studies and future areas of inquiry.

Conclusion

This study sought to identify an intervention that enabled GT middle school students to reduce levels of perfectionism, with moderate success. Findings from this study lend credence to the hypothesis that Gifted and Talented individuals may be struggling with heightened levels of perfectionism compared to their non-identified peers, particularly related to the pressures they place on themselves. Mindfulness, an intervention which has shown to be effective across age groups with various needs, can now be considered impactful for GT young adolescents. After participating in this mindfulness group, youth reported lower levels of perfectionism and maintained this finding over time. Furthermore, the fact that students reportedly enjoyed and learned from this intervention makes it socially valid. Overall, this study supports the potential

for mindfulness programming to help reduce perfectionistic cognitions among GT students.

References

- Adelson, J. L. (2007). A "perfect" case study: Perfectionism in academically talented fourth graders. *Gifted Child Today* 30(4), 14-20. doi:10.4219/gct-2007-490
- Alnabhan, M. (2011). How does moral judgement change with age and giftedness? *Gifted and Talented International*, 26(1-2), 25-30.
doi:10.1080/15332276.2011.11673586
- Auger, R. W. (2004). The accuracy of teacher reports in the identification of middle school students with depressive symptomatology. *Psychology In The Schools*, 41(3), 379-389. doi:10.1002/pits.10164
- Baker, J. A. (1996). Everyday stressors of academically gifted adolescents. *The Journal of Secondary Gifted Education*, 7(2), 356-368. doi:10.1177/1932202x9600700203
- Bain, S. K., & Bell, S. M. (2004). Social self-concept, social attributions, and peer relationships in fourth, fifth, and sixth graders who are gifted compared to high achievers. *Gifted Child Quarterly*, 48(3), 167-178.
doi:10.1177/001698620404800302
- Bardone-Cone, A. M., Wonderlich, S. A., Frost, R. O., Bulik, C. M., Mitchell, J. E., Uppala, S., & Simonich, H. (2007). Perfectionism and eating disorders: Current status and future directions. *Clinical Psychology Review*, 27(3), 384-405.
doi:10.1016/j.cpr.2006.12.005
- Bernay, R., Graham, E., Devcich, D. A., Rix, G., & Rubie-Davis, C. M. (2016). Pause, breathe, smile: A mixed-methods study of student wellbeing following

- participation in an eight-week, locally developed mindfulness program in three New Zealand schools. *Advances in School Mental Health Promotion*, 9(2), 90-106. doi:10.1080/1754730X.2016.1154474
- Bluth, K., Campo, R. A., Pruteanu-Malinici, S., Reams, A., Mullarkey, M., & Broderick, P. C. (2016). A school-based mindfulness pilot study for ethnically diverse at-risk adolescents. *Mindfulness*, 7(1), 90-104. doi:10.1007/s12671-014-0376-1
- Bose, B., Ancin, D., Frank, J., & Malik, A. (2017). *Teaching transformative life skills to students: A comprehensive dynamic mindfulness curriculum*. New York: W.W Norton & Company.
- Broderick, P. C. (2013). *Learning to BREATHE: A mindfulness curriculum for adolescents*. Oakland, CA: New Harbinger.
- Broderick, P. C., & Jennings, P. A. (2012). Mindfulness for adolescents: A promising approach to supporting emotion regulation and preventing risky behavior. *New Directions for Youth Development*, 2012(136), 111-126. doi:10.1002/yd.20042
- Brustein, M. (2014). *Perfectionism: A guide for mental health professionals*. New York: Springer.
- Burgess, A. M., & DiBartolo, P.M. (2016). Anxiety and perfectionism: Relationships, mechanisms, and conditions. In F.M. Sirois & D.S. Molnar (Eds.), *Perfectionism, Health, and Well-Being* (pp. 177-204). doi:10.1007/978-3-319-18582-8
- Burns, D. D. (1980). *The perfectionist's script for self-defeat*. Washington, DC: Sussex Publishers.
- Callard-Szulgit, R. (2003). *Perfectionism and gifted children*. Lanham, MD: Scarecrow Education.

- Callahan, C. M., Moon, T.R., Oh, S. (2013). *Status of middle school gifted programs*.
Charlottesville, VA: National Research Center on the Gifted and Talented
- Chan, D. W. (2011). Perfectionism among Chinese gifted and nongifted students in Hong Kong: The use of the Revised Almost Perfect Scale. *Journal for the Education of the Gifted*, 34(1), 68-98. doi:10.1177/016235321003400104
- Chorpita, B. F., Tracey, S. A., Brown, T. A., Collica, T. J., & Barlow, D. H. (1997).
Assessment of worry in children and adolescents: An adaption of the Penn-State Worry Questionnaire. *Behaviour Research and Therapy*, 35(6), 569–581.
- Christopher, M. M., & Shewmaker, J. (2010). The relationship of perfectionism to affective variables in gifted and highly able children. *Gifted Child Today*, 33(3), 20-30. doi:10.1177/107621751003300307
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.).
Hillsdale, NJ: Erlbaum.
- Colangelo, N., Assouline, S. G., & Gross, M. U. M. (2004). *A nation deceived: How schools hold back America's brightest students* (V.I.). Iowa City, IA: The Connie Belin & Jacqueline N. Blank International Center for Gifted Education and Talent Development.
- Colangelo, N., & Wood, S. M. (2015). Counseling the gifted: Past, present, and future directions. *Journal of Counseling & Development*, 93(2), 133-142.
10.1002/j.1556-6676.2015.00189.x
- Collaborative for Academic, Social, and Emotional Learning (2015). *Effective social and emotional learning programs: Middle and high school edition*. Chicago, IL: CASEL.

- Collishaw, S., Maughan, B., Natarajan, L., & Pickles, A. (2010). Trends in adolescent emotional problems in England: A comparison of two national cohorts twenty years apart. *Journal of Child Psychology and Psychiatry*, *51*(8), 885-894.
doi:10.1111/j.1469-7610.2010.02252.x
- Cross, J. R. (2016). Gifted children and peer relationships. In M. Neihart, S.I. Pfeiffer, & T.L. Cross (Eds.), *Social and emotional development of gifted children: What do we know?* (2nd Ed., pp. 41-54). Waco, TX: Prufrock Press.
- Cross, J. R., & Cross, T. L. (2015). Clinical and mental health issues in counseling the gifted individual. *Journal of Counseling & Development*, *93*(2), 163-172.
doi:10.1002/j.1556-6676.2015.00192.x
- Cross, T. L., & Andersen, L. (2015). Depression and suicide among gifted children and adolescents. In M. Neihart, S.I. Pfeiffer, & T.L. Cross (Eds.), *Social and emotional development of gifted children: What do we know?* (2nd ed., pp. 79-90). Waco, TX: Prufrock Press.
- Cross, T. L., Coleman, L. J., & Terhaar-Yonkers, M. (1991). The social cognition of gifted adolescents in schools: Managing the stigma of giftedness. *Journal for the Education of the Gifted*, *15*(1), 44-55. doi:10.1177/016235329101500106
- Crowley, M. J., Nicholls, S. S., McCarthy, D., Greatorex, K., Wu, J., & Mayes, L. C. (2018). Innovations in practice: Group mindfulness for adolescent anxiety – results of an open trial. *Child and Adolescent Mental Health*, *23*(2), 130-133.
doi:10.1111/camh.12214

- Curran, T., & Hill, A. P. (2017). Perfectionism is increasing over time: A meta-analysis of birth cohort differences from 1989 to 2016. *Psychological Bulletin*. doi:10.1037/bul0000138
- Davis, G., Rimm, S. B., & Siegle, D. (2011). *Education of the gifted and talented* (6th Ed.). Upper Saddle River, NJ: Pearson Education.
- Desbordes, G., Negi, L. T., Pace, T. W., Wallace, B. A., Raison, C. L., & Schwartz, E. L. (2012). Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. *Frontiers in Human Neuroscience*, 6. doi:10.3389/fnhum.2012.00292
- Dion, J., Paquette, L., Daigneault, I., Godbout, N., & Hébert, M. (2018). Validation of the French version of the child and adolescent mindfulness measure (CAMM) among samples of French and indigenous youth. *Mindfulness*, 9(2), 645-653. doi:10.1007/s12671-017-0807-x
- Dixon, F. A., Lapsley, D. K., & Hanchon, T. A. (2004). An empirical typology of perfectionism in gifted adolescents. *Gifted Child Quarterly*, 48(2), 95-106. doi:10.1177/001698620404800203
- Doll & Cummings (2008). *Transforming school mental health services: Population-based approaches to promoting the competency and wellness of children*. Thousand Oaks, CA: Corwin Press.
- Doss, K. K., & Bloom, L. (2018). Mindfulness in the middle school classroom: Strategies to target social and emotional well-being of gifted students. *Gifted Education International*, 34(2), 181-192. doi:10.1177/0261429417716352

Elementary and Secondary Education Act of 1965, H.R. 2362, 89th Cong., 1st sess.,
Public law 89-10.

Enns, M. W., & Cox, B. J. (2002). The nature and assessment of perfectionism: A critical analysis. In G. L. Flett & Paul L. Hewitt (Eds). *Perfectionism: Theory, research, and treatment* (pp. 33-62). Washington, DC: American Psychological Association.

Every Student Succeeds Act of 2015, Pub. L. No. 114-95 § 114 Stat. 1177 (2015-2016).

Exceptional Children's Educational Act, 1 CCR 301-8 (2013).

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160.

Felver, J. C., Celis-de Hoyos, C. E., Tezanos, K., & Singh, N. N. (2016). A systematic review of mindfulness-based interventions for youth in school settings. *Mindfulness*, *7*(1), 34-45. doi:10.1007/s12671-015-0389-4

Flett, G. L., Coulter, L., Hewitt, P. L., & Nepon, T. (2011). Perfectionism, rumination, worry, and depressive symptoms in early adolescents. *Canadian Journal of School Psychology*, *26*(3), 159-176. doi:10.1177/0829573511422039

Flett, G. L., & Hewitt, P. L. (2002). *Perfectionism: Theory, research, and treatment*. Washington, DC: American Psychological Association.

Flett, G. L., & Hewitt, P. L. (2014). A proposed framework for preventing perfectionism and promoting resilience and mental health among vulnerable children and adolescents. *Psychology in the Schools*, *51*(9), 899-912. doi:10.1002/pits.21792

- Flett, G. L. & Hewitt, P.L (2015). Measures of Perfectionism. In G.J Boyle, D.H. Saklofske, & G. Matthew (Eds.), *Measures of Personality and Social Psychological Constructs* (pp. 595-618). doi:10.1016/B978-0-12-386915-9.00021-8
- Flett, G. L., Hewitt, P. L., Besser, A., Su, C., Vaillancourt, T., Boucher, D., . . . Gale, O. (2016). The Child–Adolescent Perfectionism Scale: Development, psychometric properties, and associations with stress, distress, and psychiatric symptoms. *Journal of Psychoeducational Assessment*, 34(7), 634-652. doi:10.1177/0734282916651381
- Flett, G., Hewitt, P. L., Boucher, D. J., Davidson, L. A., & Munro, Y. (2000). *The Child-Adolescent Perfectionism Scale: Development, validation, and association with adjustment*. Unpublished manuscript. Retrieved from: hewittlab.psych.ubc.ca
- Flett, G. L., Hewitt, P. L., Oliver, J.M., & Macdonald, S. (2002). Perfectionism in children and their parents: A developmental analysis. In G. L. Flett & Paul L. Hewitt (Eds). *Perfectionism: Theory, research, and treatment* (pp. 33-62). Washington, DC: American Psychological Association.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14(5), 449-468. doi:10.1007/BF01172967
- Fung, J., Guo, S., Jin, J., Bear, L., & Lau, A. (2016). A pilot randomized trial evaluating a school-based mindfulness intervention for ethnic minority youth. *Mindfulness* 7(4), 819-828. doi:10.1007/s12671-016-0519-7

- Galla, B. M. (2016). Within-person changes in mindfulness and self-compassion predict enhanced emotional well-being in healthy, but stressed adolescents. *Journal of Adolescence, 49*, 204-217. doi:10.1016/j.adolescence.2016.03.016
- Gallagher, J. J. (2015). Peer acceptance of highly gifted children in elementary school. *Journal for the Education of the Gifted, 38*(1), 51-57. doi:10.1777/016235321
- Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*(2), 149-164. doi:10.1177/001440290507100202
- Gnilka, P. B., Ashby, J. S., & Noble, C. M. (2012). Multidimensional perfectionism and anxiety: Differences among individuals with perfectionism and tests of a coping-mediation model. *Journal of Counseling and Development, 90*(4), 427-436. doi:10.1002/j.1556-6676.2012.00054.x
- Goodman, A., & Goodman, R. (2012). Strengths and difficulties questionnaire scores and mental health in looked after children. *The British Journal of Psychiatry, 200*, 426-427.
- Greco, L. A., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the Child and Adolescent Mindfulness Measure (CAMM). *Psychological Assessment, 23*(3), 606-614. doi:10.1037/a0022819
- Greenspon, T. S. (2012). Perfectionism: A counselor's role in a recovery process. In T. L. Cross & J. R. Cross (Eds.) *Handbook for counselors serving students with gifts*

and talents: Development, relationships school issues, and counseling needs interventions (pp. 597-614). Waco, TX: Prurfrock Press.

Greeson, J. M. (2009). Mindfulness research update: 2008. *Complementary Health Practice Review, 14*(1), 10-18. doi:10.1177/1533210108329862

Gross, M. U. M. (2004). *Exceptionally gifted children* (2nd ed.). London & New York: RoutledgeFalmer.

Guignard, J., Jacquet, A., & Lubart, T. (2012). Perfectionism and anxiety: A paradox in intellectual giftedness? *Plos One, 7*(7), e41043.

doi:10.1371/journal.pone.0041043

Haberlin, S. (2015). Don't stress: What do we really know about teaching gifted children to cope with stress and anxiety? *Gifted and Talented International, 30*(1-2), 146-151. doi:10.1080/15332276.2015.1137465

Haberlin, S., & O'Grady, P. (2018). Gifted from the "Inside out:" Teaching mindfulness to high-ability children. *Gifted Education International, 34*(2), 173-180.

doi:10.1177/0261429417716351

Hansen, J. B., & Toso, S. J. (2007). Gifted dropouts: Personality, family, social, and school factors. *Gifted Child Today, 30*(4), 30-41. doi:10.4219/gct-2007-488

Hawn Foundation (2011). *MindUP Curriculum*. New York, NY: Scholastic.

Herman, K. C., Wang, K., Trotter, R., Reinke, W. M., & Ialongo, N. (2013).

Developmental trajectories of maladaptive perfectionism among African American adolescents. *Child Development, 84*(5), 1633-1650.

doi:10.1111/cdev.12078

- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60*(3), 456-470. doi:10.1037/0022-3514.60.3.456
- Hewitt, P. L., & Flett, G. L. (2004). *Multidimensional Perfectionism Scale (MPS): Technical manual*. Toronto, Canada: Multi-Health Systems.
- Hinterman, C., Burns, L., Hopwood, D., & Rogers, W. (2012). Mindfulness: Seeking a more perfect approach to coping with life's challenges. *Mindfulness, 3*(4), 275-281. doi:10.1007/s12671-012-0091-8
- Hoogeveen, L., van Hell, J. G., & Verhoeven, L. (2009). Self-concept and social status of accelerated and nonaccelerated students in the first 2 years of secondary school in the Netherlands. *The Gifted Child Quarterly, 53*(1), 50-67. doi:10.1177/0016986208326556
- Huggins, L., Davis, M. C., Rooney, R., & Kane, R. (2008). Socially Prescribed and Self-Oriented Perfectionism as predictors of depressive diagnosis in preadolescents. *Australian Journal of Guidance and Counselling, 18*(2), 182-194. doi:10.1375/ajgc.18.2.182
- Jackson, P. S. (1998). Bright star - black sky a phenomenological study of depression as a window into the psyche of the gifted adolescent. *Roeper Review, 20*(3), 215. doi:10.1080/02783199809553894
- Jackson, P. S., & Peterson, J. (2003). Depressive disorder in highly gifted adolescents. *Journal of Advanced Academics, 14*(3), 175-186. doi:10.4219/jsge-2003-429

- James, K., & Rimes, K. A. (2018). Mindfulness-based cognitive therapy versus pure cognitive behavioural self-help for perfectionism: A pilot randomised study. *Mindfulness*, 9(3), 801-814. doi:10.1007/s12671-017-0817-8
- James, K., Verplanken, B., & Rimes, K. A. (2015). Self-criticism as a mediator in the relationship between unhealthy perfectionism and distress. *Personality and Individual Differences*, 79, 123-128. doi:10.1016/j.paid.2015.01.030
- Jimerson, S. R., Burns, M. K., & VanDerHeyden, A. M. (Eds., 2016). *Handbook of response to intervention: The science and practice of multi-tiered systems of support*. New York: Springer. doi:10.1007/978-1-4899-7568-3
- Jolly, J. L. (2009). A resuscitation of gifted education. *American Educational History Journal*, 36(1-2), 37. Retrieved from: <http://www.infoagepub.com/american-educational-history-journal>
- Kabat-Zinn, J. (2005). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.
- Kerrigan, D., Chau, V., King, M., Holman, E., Joffe, A., & Sibinga, E. (2017). There is no performance, there is just this moment: The role of mindfulness instruction in promoting health and well-being among students at a highly-ranked university in the United States. *Journal of Evidence-Based Complementary & Alternative Medicine*, 22(4), 909-918. doi:10.1177/2156587217719787
- Košir, K., Horvat, M., Aram, U., & Jurinec, N. (2016). Is being gifted always an advantage? peer relations and self-concept of gifted students. *High Ability Studies*, 27(2), 129-148. doi:10.1080/13598139.2015.1108186

- Kuby, A. K., McLean, N., & Allen, K. (2015). Validation of the child and adolescent mindfulness measure (CAMM) with non-clinical adolescents. *Mindfulness, 6*(6), 1448-1455. doi:10.1007/s12671-015-0418-3
- Landis, R. N., & Reschly, A. L. (2013). Reexamining gifted underachievement and dropout through the lens of student engagement. *Journal for the Education of the Gifted, 36*(2), 220-249. doi:10.1177/0162353213480864
- Lasota, M., & Kearney, C. (2017). Maladaptive perfectionism and depression and state-trait anxiety: A mediational analysis with self-esteem. *Journal of Social and Clinical Psychology, 36*(4), 346-357. doi:10.1521/jscp.2017.36.4.346
- Lawlor, M. S. (2014). Mindfulness in practice: Considerations for implementation of mindfulness-based programming for adolescents in school contexts. *New Directions for Youth Development, 2014*(142), 83-95. doi:10.1002/yd.20098
- Lee, S., & Olszewski-Kubilius, P. (2006). The emotional intelligence, moral judgment, and leadership of academically gifted adolescents. *Journal for the Education of the Gifted, 30*(1), 29-67. doi:10.1177/016235320603000103
- Lee, S., Olszewski-Kubilius, P., & Thomson, D. T. (2012). Academically gifted students' perceived interpersonal competence and peer relationships. *Gifted Child Quarterly, 56*(2), 90-104. doi:10.1177/0016986212442568
- Lei, P., & Wu, Q. (2007). An NCME instructional module on introduction to structural equation modeling: Issues and practical considerations. *Educational Measurement, Issues and Practice, 26*(3), 33.

- Leone, E. M., & Wade, T. D. (2018). Measuring perfectionism in children: A systematic review of the mental health literature. *European Child & Adolescent Psychiatry, 27*(5), 553-567. doi:10.1007/s00787-017-1078-8
- Litster, K., & Roberts, J. (2011). The self-concepts and perceived competencies of gifted and non-gifted students: A meta-analysis. *Journal of Research in Special Educational Needs, 11*(2), 130-140. doi:10.1111/j.1471-3802.2010.01166.x
- Loveless, T. (2008). An analysis of NAEP data. In Thomas B. Fordham Institute, *High achieving students in the era of NCLB* (pp.13-40). Washington DC: Author.
- Margot, K. C., & Rinn, A. N. (2016). Perfectionism in gifted adolescents: A replication and extension. *Journal of Advanced Academics, 27*(3), 190-209.
doi:10.1177/1932202X16656452
- Marland, S. P., Jr. (1972). *Education of the gifted and talented: Report to the Congress of the United States by the U.S. Commissioner of Education and background papers submitted to the U.S. Office of Education*. 2 vols (Government Documents, Y4.L 11/2: G36). Washington, DC: U.S. Government Printing Office.
- Martin, L. T., Burns, R. M., & Schonlau, M. (2010). Mental disorders among gifted and nongifted youth: A selected review of the epidemiologic literature. Los Angeles, CA: SAGE Publications. doi:10.1177/0016986209352684
- Matthews, M. S. (2006). Gifted students dropping out: Recent findings from a southeastern state. *Roeper Review, 28*(4), 216-223.
doi:10.1080/02783190609554367

- McClain, M., & Pfeiffer, S. (2012). Identification of gifted students in the united states today: A look at state definitions, policies, and practices. *Journal of Applied School Psychology, 28*(1), 59-88. doi:10.1080/15377903.2012.643757
- McCoach, D. B., & Siegle, D. (2003). Factors that differentiate underachieving gifted students from high-achieving gifted students. *Gifted Child Quarterly, 47*(2), 144-154. doi:10.1177/001698620304700205
- McCreary, B. T., Joiner, T. E., Schmidt, N. B., & Ialongo, N. S. (2004). The structure and correlates of perfectionism in African American children. *Journal of Clinical Child and Adolescent Psychology, 32*(2), 313–324. doi:10.1207/s15374424jccp3302_13
- Meijs, N., Cillessen, A. H. N., Scholte, R. H. J., Segers, P. C. J., & Spijkerman, R. (2010). Social intelligence and academic achievement as predictors of adolescent popularity. *Journal of Youth and Adolescence, 39*(1), 62-72. doi:10.1007/s10964-008-9373-9
- Metz, S. M., Frank, J. L., Reibel, D., Cantrell, T., Sanders, R., & Broderick, P. C. (2013). The effectiveness of the learning to BREATHE program on adolescent emotion regulation. *Research in Human Development, 10*(3), 252-272. doi:10.1080/15427609.2013.818488
- Mikami, A. Y., Griggs, M. S., Reuland, M. M., & Gregory, A. (2012). Teacher practices as predictors of children's classroom social preference. *Journal of School Psychology, 50*(1), 95-111. doi:10.1016/j.jsp.2011.08.002
- Mindfulness in Schools Project (n.d.). Retrieved from: <https://mindfulnessinschools.org/>

- Mitchell, J. H., Broeren, S., Newall, C., & Hudson, J. L. (2013). An experimental manipulation of maternal perfectionistic anxious rearing behaviors with anxious and non-anxious children. *Journal of Experimental Child Psychology, 116*(1), 1-18. doi:10.1016/j.jecp.2012.12.006
- Mofield, E. L., & Chakraborti-Ghosh, S. (2010). Addressing multidimensional perfectionism in gifted adolescents with affective curriculum. *Journal for the Education of the Gifted, 33*(4), 479-513. doi:10.1177/016235321003300403
- Morris, L., & Lomax, C. (2014). Review: Assessment, development, and treatment of childhood perfectionism: A systematic review. *Child and Adolescent Mental Health, 19*(4), 225-234. doi:10.1111/camh.12067
- National Association for Gifted Children (n.d.). *Perfectionism*. Retrieved from <https://www.nagc.org/resources-publications/resources-parents/social-emotional-issues/perfectionism>
- National Center for Education Statistics (2016). *Digest of Education Statistics*. Retrieved from: https://nces.ed.gov/programs/digest/d16/tables/dt16_204.80.asp
- No Child Left Behind Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002).
- Neihart, M. (1999). The impact of giftedness on psychological well being: What does the empirical literature say? *Roeper Review, 22*(1), 10-17.
doi:10.1080/02783199909553991
- Neihart, M. (2012). Anxiety, depression, and resilience. In T. L. Cross & J. R. Cross (Eds.) *Handbook for counselors serving students with gifts and talents: Development, relationships school issues, and counseling needs interventions* (pp. 597-614). Waco, TX: Prurfrock Press

- Neihart, M., Pfeiffer, S., & Cross, T. (Eds., 2016). What have we learned and what should we do next? *The social and emotional development of gifted children: What do we know?* (2nd Ed., pp. 283-298). Waco, TX: Prufrock Press.
- O'Connor, D. B., O'Connor, R. C., & Marshall, R. (2007). Perfectionism and psychological distress: Evidence of the mediating effects of rumination. *European Journal of Personality, 21*(4), 429-452. doi:10.1002/per.616
- O'Connor, R. C., Dixon, D., & Rasmussen, S. (2009). The structure and temporal stability of the Child and Adolescent Perfectionism Scale. *Psychological Assessment, 21*(3), 437-443. doi:10.1037/a0016264
- Orange, C. (1997). Gifted students and perfectionism. *Roeper Review, 20*(1), 39-41. doi:10.1080/02783199709553849
- Parker, W. D., & Mills, C. J. (1996). The incidence of perfectionism in gifted students. *Gifted Child Quarterly, 40*(4), 194-199. doi:10.1177/001698629604000404
- Pepping, C. A., Duvenage, M., Cronin, T. J., & Lyons, A. (2016). Adolescent mindfulness and psychopathology: The role of emotion regulation. *Personality and Individual Differences, 99*, 302-307. doi:10.1016/j.paid.2016.04.089
- Peterson, J. S. (2009). Myth 17: Gifted and talented individuals do not have unique social and emotional needs. *The Gifted Child Quarterly, 53*(4), 280-282. doi:10.1177/0016986209346946
- Portešová, Š., & Urbánek, T. (2013). Typology of perfectionism in a group of mathematically gifted czech adolescents over one decade. *The Journal of Early Adolescence, 33*(8), 1116-1144. doi:10.1177/0272431613487603

- Privitera, G.J., (2015). *Statistics for the Behavioral Sciences* (2nd Ed.). Los Angeles, CA: Sage.
- R Core Team (2013). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing
- Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly, 44*(3), 152-170.
doi:10.1177/001698620004400302
- Renzulli, J. S., & Park, S. (2002). Giftedness and high school dropouts: Personal, family, and school-related factors (RM02168). Storrs: University of Connecticut, The National Research Center on the Gifted and Talented.
- Reschly, A. L., Appleton, J. J., & Pohl, A. (2014). Best practices in fostering student engagement. In A. Thomas and P. Harrison (Eds.) *Best Practices in School Psychology*. Bethesda, MD: National Association of School Psychologists.
- Reyes, M. E. S., Layno, K. J. T., Castañeda, J. R.,E., Collantes, A. A., Sigua, M. A. D., & McCutcheon, L. E. (2015). Perfectionism and its relationship to the depressive feelings of gifted Filipino adolescents. *North American Journal of Psychology, 17*(2), 317-322. Retrieved from: <http://najp.us/>
- Reynolds, C. R., & Bradley, M. (1983). Emotional stability of intellectually superior children versus nongifted peers as estimated by chronic anxiety levels. *School Psychology Review, 12*, 190-194.
- Rice, K. G., Ashby, J. S., & Slaney, R. B. (1998). Self-esteem as a mediator between perfectionism and depression: A structural equations analysis. *Journal of Counseling Psychology, 45*(3), 304-314. doi:10.1037/0022-0167.45.3.304

- Richardson, J. T. E. (2011). Eta squared and partial eta squared as measures of effect size in educational research. *Educational Research Review*, 6(2), 135-147.
doi:10.1016/j.edurev.2010.12.001
- Rimm, S. (2006). Growing up too fast-and gifted. *Parenting for High Potential*. Washington, DC: National Association for Gifted Children.
- Rimm, S. (2007). What's wrong with perfect? Clinical perspectives on perfectionism and underachievement. *Gifted Education International*, 23(3), 246-253.
doi:10.1177/026142940702300305
- Ritchotte, J. A., & Graefe, A. K. (2017). An alternate path: The experience of high-potential individuals who left school. *Gifted Child Quarterly*, 61(4), 275-289.
doi:10.1177/0016986217722615
- Ritchotte, J. A., Matthews, M. S., & Flowers, C. P. (2014). The validity of the achievement-orientation model for gifted middle school students: An exploratory study. *Gifted Child Quarterly*, 58(3), 183-198. doi:10.1177/0016986214534890
- Roberts, S. M., & Lovett, S. B. (1994). Examining the "F" in gifted: Academically gifted adolescents' physiological and affective responses to scholastic failure. *Journal for the Education of the Gifted* 17(3), 241-259.
doi:10.1177/016235329401700304
- Rocque, M., Jennings, W. G., Piquero, A. R., Ozkan, T., & Farrington, D. P. (2017). The importance of school attendance: Findings from the Cambridge study in delinquent development on the life-course effects of truancy. *Crime & Delinquency*, 63(5), 592-612. doi:10.1177/001128716660520

- Roeser, R. W., & Pinela, C. (2014). Mindfulness and compassion training in adolescence: A developmental contemplative science perspective. *New Directions for Youth Development, 2014*(142), 9-30. doi:10.1002/yd.20094
- Ross, P. (1993). *National Excellence: A case for Developing America's Talent*. Washington DC: U.S. Department of Education.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*(5), 749-761. doi:10.1037/0022-3514.57.5.749
- Schuler, P. A. (2000). Perfectionism and gifted adolescents. *The Journal of Secondary Gifted Education, 11*(4), 183-196. doi:10.4219/jsge-2000-629
- Schutte, I., Wolfensberger, M., & Tirri, K. (2014). The relationship between ethical sensitivity, high ability and gender in higher education students. *Gifted and Talented International, 29*(1-2), 39-48. doi:10.1080/15332276.2014.11678428
- Sharp, J. E., Niemiec, R. M., & Lawrence, C. (2017). Using mindfulness-based strengths practices with gifted populations. *Gifted Education International, 33*(2), 131-144. doi:10.1177/0261429416641009
- Short, M. M., & Mazmanian, D. (2013). Perfectionism and negative repetitive thoughts: Examining a multiple mediator model in relation to mindfulness. *Personality and Individual Differences, 55*(6), 716-721. doi:10.1016/j.paid.2013.05.026
- Sirois, F. M., & Molnar, D. S. (Eds., 2016). *Perfectionism, health, and well-being*. Switzerland: Springer. doi:10.1007/978-3-319-18582-8
- Southern, W. T. & Jones, E. D. (2015). Types of acceleration: Dimensions and Issues. In S.G. Assouline, N. Colangelo, J Vantassl-Baska, & A. Lupkowski-Shoplik (Eds.).

- A nation empowered: Evidence trumps the excuses holding back America's brightest students* (V.II., pp. 9-18). Iowa City, IA: The Connie Belin & Jacqueline N. Blank International Center for Gifted Education and Talent Development.
- Speirs Neumeister, K. L. (2016). Perfectionism in gifted students. In M. Neihart, S.I. Pfeiffer, & T.L. Cross (Eds.). *The social and emotional development of gifted students; What do we know?* (2nd Ed., pp. 29-40). Washington, DC: National Association for Gifted Children.
- Speirs Neumeister, K. L. (2018). Perfectionism in gifted students. In J. Soeber (Ed.) *The psychology of perfectionism: Theory, research, applications* (pp. 134-154). New York: Routledge.
- Steenbergen-Hu, S., Makel, M. C., & Olszewski-Kubilius, P. (2016). What one hundred years of research says about the effects of ability grouping and acceleration on K–12 students' academic achievement: Findings of two second-order meta-analyses. *Review of Educational Research*, 86(4), 849-899.
doi:10.3102/0034654316675417
- Steenbergen-Hu, S., & Moon, S. M. (2011). The effects of acceleration on high-ability learners: A meta-analysis. *Gifted Child Quarterly*, 55(1), 39-53.
doi:10.1177/0016986210383155
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using Multivariate Statistics* (5th Ed.). Boston, MA: Pearson.
- Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical

- heterogeneous mental health diagnoses. *Clinical Child Psychology and Psychiatry*, 18(2), 300-312. doi:10.1177/1359104512455182
- Tang, Y. (2017). *The neuroscience of mindfulness meditation: How the body and mind work together to change our behavior*. Cham: Palgrave Macmillan.
- Tang, Y., Ma, Y., Fan, Y., Feng, H., Wang, J., Feng, S., . . . Fan, M. (2009). Central and autonomic nervous system interaction is altered by short-term meditation. *Proceedings of the National Academy of Sciences*, 106(22), 8865-8870. doi:10.1073/pnas.0904031106
- Taren, A. A., Gianaros, P. J., Greco, C. M., Lindsay, E. K., Fairgrieve, A., Brown, K. W., . . . Creswell, J. D. (2015). Mindfulness meditation training alters stress-related amygdala resting state functional connectivity: A randomized controlled trial. *Social Cognitive and Affective Neuroscience*, 10(12), 1758-1768. doi:10.1093/scan/nsv066
- Tirri, K., & Nokelainen, P. (2007). Comparison of academically average and gifted students' self-rated ethical sensitivity. *Educational Research and Evaluation*, 13(6), 587-601. doi:10.1080/13803610701786053
- Tong, J., & Yewchuk, C. (1996). Self-concept and sex-role orientation in gifted high school students. *Gifted Child Quarterly*, 40(1), 15-23. doi:10.1177/001698629604000103
- Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Lacefield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938–2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review*, 30(2), 145-154. doi:10.1016/j.cpr.2009.10.005

- Vandiver, B. J., & Worrell, F. C. (2002). The reliability and validity of scores on the Almost Perfect Scale–Revised with academically talented middle school students. *Journal of Advanced Academics, 13*(3), 108-119. doi:10.4219/jsge-2002-372
- Viafora, D. P., Mathiesen, S. G., & Unsworth, S. J. (2015). Teaching mindfulness to middle school students and homeless youth in school classrooms. *Journal of Child and Family Studies, 24*(5), 1179-1191. doi:10.1007/s10826-014-9926-3
- Wardman, J. (2014). Full-year acceleration at high school: Parents support the social and emotional challenges of their children. *Gifted and Talented International, 29*(1-2), 49-62. doi:10.1080/15332276.2014.11678429
- Weare, K. (2016). Mindfulness in education. In M.A. West (ed.), *The psychology of meditation: Research and practice* (pp. 259-281). Oxford, United Kingdom: Oxford University Press.
- Weare, K., & Nind, M. (2011). Mental health promotion and problem prevention in schools: What does the evidence say? *Health Promotion International, 26*(1), 29-69. doi:10.1093/heapro/dar075
- Wiley, K. (2016). Theories of social and emotional development in gifted children. In M. Neihart, S.I. Pfeiffer, & T.L. Cross (Eds.), *Social and emotional development of gifted children: What do we know?* (2nd Ed., pp. 3-16). Waco, TX: Prufrock Press.
- Wilksch, S. M., Durbridge, M. R., M., & Wade, T. D., (2008). A preliminary controlled comparison of programs designed to reduce risk of eating disorders targeting perfectionism and media literacy. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(8), 939-947. doi:10.1097/CHI.0b013e3181799f4a

- World Health Organization (n.d.). *Recognizing adolescence*. Retrieved from:
<http://apps.who.int/adolescent/second-decade/section2/page1/recognizing-adolescence.html>
- Ysseldyke, J., Burns, M., Dawson, P., Kelley, B., Morrison, D., Ortiz, S. & ... Telzrow, C. (2006). *School psychology: A blueprint for training and practice III*. Bethesda, MD: *National Association of School Psychologists*.
- Zelazo, P. D., & Lyons, K. E. (2012). The potential benefits of mindfulness training in early childhood: A developmental social cognitive neuroscience perspective. *Child Development Perspectives*, 6(2), 154-160. doi:10.1111/j.1750-8606.2012.00241.x
- Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools - A systematic review and meta-analysis. *Frontiers in Psychology*, 5. doi:10.3389/fpsyg.2014.00603

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL



Institutional Review Board

DATE: September 13, 2018
 TO: Sophia Olton-Weber, MA
 FROM: University of Northern Colorado (UNCO) IRB
 PROJECT TITLE: [1294971-3] Reducing Levels of Perfectionism in Gifted and Talented Youth Through a Mindfulness Intervention
 SUBMISSION TYPE: Amendment/Modification
 ACTION: APPROVED
 APPROVAL DATE: September 13, 2018
 EXPIRATION DATE: September 12, 2019
 REVIEW TYPE: Expedited Review

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED

adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 12, 2019. Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu.

Please include your project title and reference number in all correspondence with this committee.

Sophia -

Thank you for your vigilance in responding and making amendments to your IRB as requested. Dr. Helm, the first reviewer, has recommended approval based on the most recent revisions, amendments and additions provided. Subsequently, I reviewed your original and all revised/amended materials and am also recommending approval.

Please be sure to use all amended and additional materials (consent, assent, letter, etc.) and protocols developed in this review process in your participation recruitment and data collection.

Best wishes with your interesting and relevant research.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records

APPENDIX B
EMAIL TO PARENTS

Title: Mindfulness Group for Gifted XXX Middle Schoolers!

Body:

Good morning,

My name is Sophia Olton-Weber, and I was a school psychology practicum student last year at XXX. This year, I am back to run mindfulness groups with your Gifted students! It is a six week program called Learning to Breathe, district and principal-approved. It will be 45 minutes, one Tuesday a week, and will take place during alternating core plus classes (that way students only miss 3 of each). Mindfulness has been shown to improve emotional well-being, the ability self-regulate, and even academic performance. If you are interested in your child participating (and they are too!) they will be given forms at the GT retreat. I have also included the form to be filled out in this email, in case you wish to print it out and have them return it to me the day of the retreat.

And speaking of the retreat, there is still time to turn in your permission forms!

Please feel free to email me at any time at olto8902@bears.unco.edu.

Best,

Sophia Olton-Weber

Doctoral Student in School Psychology
University of Northern Colorado

APPENDIX C
COVER LETTER



Hello! My name is Sophia Olton-Weber, and I am a school psychology doctoral student at the University of Northern Colorado. I am excited to say that I am putting together groups on mindfulness with Gifted and Talented students at XXX! This letter is to invite your child to participate in the groups. While my interest is in perfectionism, and I will be measuring levels of that, mindfulness has been shown to be helpful across many different areas!

What is mindfulness?

Mindfulness has been described as the act of paying attention to each moment with a friendly, nonjudgmental, and curious frame of mind. Mindfulness has been a growing field in education and psychology. It has been shown to increase academic ability and help students understand and manage their emotions. Mindfulness has also been found to decrease anxiety and obsessive thoughts. Though many experts on Gifted and Talented students recommend mindfulness with this population, there are not many opportunities for students to get to take part. I hope to change that!

What would this look like for my child?

Your child would get to participate in six sessions of mindfulness. Each week we will examine a different element, from being aware of one's body, emotions, and thoughts, to using mindfulness to reduce stress and increase compassion. Sessions last 45 minutes. Students will meet every Tuesday for six weeks during a core plus class. Each week students will miss a different core plus, so they only miss three of each class. The district and the principal have approved this research. That means there will be no penalty for your child's participation.

What would my child be required to do?

The only two elements required from your child are that they attend the sessions and fill out a demographic form and two survey forms three times. I will be measuring levels of perfectionism and mindfulness before and after the intervention, and then 4-6 weeks later. There will be no assigned homework, but students are encouraged to practice what they have learned.

How do I sign my child up?

If you and your child are interested in being a part of this opportunity, please fill out the attached forms and return them to Ms. Vollmar or the registrar's office by **Friday, September 28th**. If you have any questions at all please feel free to contact me by phone or email (olto8902@bears.unco.edu). I look forward to working with your kids!

Best,
Sophia Olton-Weber, MA

APPENDIX D
INFORMED CONSENT



CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH UNIVERSITY OF NORTHERN COLORADO

Project Title: Reducing Levels of Perfectionism in Gifted and Talented Youth Through a Mindfulness Intervention

Researcher: Sophia Olton-Weber, MA, School Psychology

Email: olto8902@bears.unco.edu

Research Advisor: Robyn Hess, PhD Email: robyn.hess@unco.edu

Phone Number: 970-351-1636

Parent/Caregiver Consent for Mindfulness Intervention

My name is Sophia Olton-Weber and I am interesting in studying mindfulness. Specifically, I am looking at if it can decrease perfectionism and increase mindfulness in Gifted and Talented adolescents. I am a fourth-year doctoral student studying School Psychology. Last year, I was a practicum student at XXX. If you grant permission and if your child wants to participate, they would receive six group sessions on mindfulness. Groups will be divided by grade, and meet in a quiet classroom once a week. Each lesson is 45 minutes. Students would meet during one of their core plus classes, alternating which one every week. This way, they only miss each core plus three times. This reduces the amount of time they would miss instruction. In addition, students will go to their core plus classroom for the first five minutes to pick up work they might need that day. The principal has already approved this study, so there will be no penalty for students missing core plus classes to come to this group. In total, students will miss six classes over six weeks. I will be running the intervention group myself, with possible help from another School Psychology student working at XXX. The intervention is called Learning to Breathe (Broderick, 2013). It was designed for adolescents in school settings. Students will learn about how to identify and accept their own thoughts and feelings in the present moment. They will learn how to relax different muscles, reduce stress, and be conscious of how they are moving. Mindfulness interventions like these have been shown to improve anxiety, stress, emotional regulation, and even academic performance. Your child will be given a journal in which they can write down thoughts and do activities. They will be asked to practice what they have learned throughout the week if they are willing and able, though nothing will be required. The only requirements are that students fill out three forms. One contains questions about their age and gender. Another one is a 22-question screener about perfectionism and the last one is a 10-question screener about mindfulness. They will be asked to complete the screeners before and after the intervention, during the session. They will also be asked to fill them out six weeks after.

For this third time, students will be called down as a group to the vice principal's office to fill it out at the beginning of a school day. This will only take five minutes.

I do not believe that there will be risks to participants outside of the normal stress students may feel when they are asked about their current frame of mind. In addition, participating and sharing each session is completely voluntary. To help maintain confidentiality, all physical files will be stored in a locked file when not in use. This will be located in the Research Advisor's locked office. Student's names will not be on any information entered on the computer. Instead, each student will be assigned a number to represent them. Data will be kept in one password protected computer. All files will be destroyed three years after the study is completed. The actual names of students and parents/caregivers will not appear in any professional report of this research.

Participants should know that I have a legal responsibility to report suspected mistreatment of children and serious threats against self or others. Please feel free to phone me if you have any questions or concerns about this research. Also, please keep a copy of this letter for your records. Thank you for your assistance.

Participation is voluntary. You may decide your child should not take part in this study. If s/he begins, they can withdraw at any time. The decision will be respected and will not result in a loss of benefits. After reading the above and having a chance to ask any questions, please sign below if you would like your child to participate in this research. A copy of this form will be given to you to keep. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Office of Research, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

Sincerely,

Sophia Olton-Weber, MA
University of Northern Colorado

Child's Full Name (please print)

Child's Birth Date (month/day/year)

Parent/Guardian's Signature

Date

Researcher's Signature

Date

APPENDIX E
ASSENT FOR MINORS

ASSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Hello,

My name is Sophia Olton-Weber and I am studying to get my degree in School Psychology at the University of Northern Colorado. I am really interested in research on mindfulness and how it can help youth like you. I want to know whether learning to accept the present moment, and finding ways to help reduce stress, can help you feel better as a Gifted and Talented middle school student.

If you are interested, I am doing a six-week mindfulness group that will happen during one of your core plus classes one day each week. You will be asked to fill out three sets of surveys. One will be right before we start, one right after the groups finish, and the last one six weeks following the end of the group. There are no right or wrong answers on the surveys, and no grades will be assigned. Each week we will focus on a different aspect of mindfulness. These include deep breathing, accepting the here and now, lowering stress, and moving mindfully.

Talking with me probably won't hurt, and you may learn some strategies to help you cope with the stresses of being a gifted adolescent. Your parents have said it's okay for you to talk with me, but you don't have to. It's up to you. Also, if you say "yes" but then change your mind, you can stop any time you want to. Do you have any questions for me about my research?

If you want to be in my research and work on some mindfulness techniques, sign your name below and write today's date next to it. Thanks!

Student

Date

Researcher

Date

APPENDIX F
DEMOGRAPHIC QUESTIONS

Please answer the following questions:

What Grade are you in?

What is your gender?

APPENDIX G
CHILD-ADOLESCENT PERFECTIONISM SCALE
AND NORMATIVE TABLE

SURVEY

This is a chance to find out about yourself. It is not a test. There are no right answers and everyone will have different answers. Be sure that your answers show how you actually are. Please do not talk about your answers with anyone else. We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence below and pick your answer by circling a number from “1” to “5”. The five possible answers for each sentence are listed below:

- 1 = False—Not at all true of me
- 2 = Mostly False
- 3 = Neither True Nor False
- 4 = Mostly True
- 5 = Very True of me

For example, if you were given the sentence “I like to read comic books,” you would circle a “5” if this is very true of you. If you were given the sentence “I like to keep my room neat and tidy,” you would circle a “1” if this was false and not at all true of you.

You are now ready to begin.

Please be sure to answer all of the sentences.

- | | False True |
|--|-------------------|
| 1. I try to be perfect in everything I do. | 1 2 3 4 5 |
| 2. I want to be the best at everything I do. | 1 2 3 4 5 |
| 3. My parents don't always expect me to be perfect in
everything I do. | 1 2 3 4 5 |
| 4. I feel that I have to do my best all the time. | 1 2 3 4 5 |
| 5. There are people in my life who expect me to be perfect. | 1 2 3 4 5 |
| 6. I always try for the top score on a test. | 1 2 3 4 5 |
| 7. It really bothers me if I don't do my best all the time. | 1 2 3 4 5 |
| 8. My family expects me to be perfect. | 1 2 3 4 5 |
| 9. I don't always try to be the best. | 1 2 3 4 5 |
| 10. People expect more from me than I am able to give. | 1 2 3 4 5 |
| 11. I get mad at myself when I make a mistake. | 1 2 3 4 5 |
| 12. Other people think that I have failed if I do not do my very best
all the time. | 1 2 3 4 5 |
| 13. Other people always expect me to be perfect. | 1 2 3 4 5 |
| 14. I get upset if there is even one mistake in my work. | 1 2 3 4 5 |
| 15. People around me expect me to be great at everything. | 1 2 3 4 5 |
| 16. When I do something, it has to be perfect. | 1 2 3 4 5 |
| 17. My teachers expect my work to be perfect. | 1 2 3 4 5 |
| 18. I do not have to be the best at everything I do. | 1 2 3 4 5 |
| 19. I am always expected to do better than others. | 1 2 3 4 5 |
| 20. Even when I pass, I feel that I have failed if I didn't get
one of the highest marks in the class. | 1 2 3 4 5 |
| 21. I feel that people ask too much of me. | 1 2 3 4 5 |
| 22. I can't stand to be less than perfect. | 1 2 3 4 5 |

Normative Data for Child Adolescent Perfectionism Scale Subscales of Self-Oriented Perfectionism and Socially Prescribed Perfectionism for Community and Psychiatric Patients

	Age	N	Self		Social	
			<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Community						
Child (6-12)	10.07 (1.19)	369	31.45	8.46	25.59	8.66
Male	10.10 (1.20)	178	31.92	8.31	26.20	8.50
Female	10.04 (1.21)	191	31.01	8.59	25.02	8.79
Adol. (13-18)	14.74 (1.02)	598	29.38	8.34	25.80	8.57
Male	14.85 (1.00)	246	29.44	7.85	26.88	8.80
Female	14.66 (1.03)	352	29.34	8.68	25.05	8.35
Patients						
Child (6-12)	10.56 (1.35)	85	34.67	9.07	22.93	9.92
Male	10.62 (1.32)	52	34.98	8.61	24.65	8.40
Female	10.48 (1.42)	33	34.18	9.86	20.21	8.02
Adol. (13-18)	15.31 (1.64)	238	33.41	10.21	25.87	9.19
Male	15.14 (1.71)	111	32.27	9.57	25.14	9.11
Female	15.45 (1.64)	128	34.41	10.67	26.52	9.24

APPENDIX H
CHILD AND ADOLESCENT MINDFULNESS
MEASURE

Child and Adolescent Mindfulness Measure (CAMM)

We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle the number that tells how often each sentence is true for you.

	Never True	Rarely True	Sometimes True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.	0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.	0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.	0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.	0	1	2	3	4
5. I push away thoughts that I don't like.	0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.	0	1	2	3	4
7. I get upset with myself for having certain thoughts.	0	1	2	3	4
8. I think about things that have happened in the past instead of thinking about things that are happening right now.	0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.	0	1	2	3	4
10. I stop myself from having feelings that I don't like.	0	1	2	3	4