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Psychological Attributes in Teachers: Pre-service Teachers' Empathy and ADHD Stigma Perceptions

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by

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Abstract

The current study investigated the relationship between pre-service teachers' levels of empathy and their perceptions of the stigma individuals with Attention-Deficit/Hyperactivity Disorder (ADHD) experience. Thirty-three pre-service teachers from a post-secondary urban institution in Western Canada completed online self-report measures. Results indicated pre-service teachers endorse empathy levels in the above-average range. Furthermore, prospective teachers in this sample believe individuals with ADHD encounter a moderate degree of stigma. Additionally, there was a weak, positive correlation found between pre-service teachers' empathy levels and their awareness of the stigmatizing attitudes the public has of individuals with ADHD. However, no significant association was found between prospective teachers' empathy levels and their overall awareness of the stigma individuals with ADHD may encounter. These findings have implications for teacher-training programs, as well as future research examining psychological attributes in teachers.

Keywords: empathy, ADHD stigma perceptions, perspective-taking, pre-service teachers

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ADHD   Attention-Deficit/Hyperactivity Disorder

APA   American Psychiatric Association

ASQ   ADHD Stigma Questionnaire

TEQ   Toronto Empathy Questionnaire

ANOVA   Analysis of Variance

Chapter 1: Introduction

Positive teacher-student relationships have been found to promote academic success and social development in school-aged children and adolescents with exceptionalities. Educators use the term exceptionalities to refer to students with disabilities who would benefit from special education programming and/or services designed to accommodate their specific learning needs (Corcoran & Tormey, 2012; Hutchinson, 2007). Empathy, which is the capacity to understand and respond to the affective experiences of another individual with appropriate emotion, is a psychological attribute that has been found to influence the quality of relationships that teachers may establish and maintain with students (Baron-Cohen & Wheelwright, 2004; Barr, 2013). This capacity has been previously examined in teacher populations; however, the majority of such studies have specifically examined empathy levels in in-service teachers, with only a limited number of studies examining this attribute in pre-service teachers. Examining empathy in both current and future educators can provide valuable insight into the extent to which teacher-training programs enhance this capacity in teachers and as such, prepare them to effectively meet their students' diverse learning needs.

Teachers' understanding of the negative experiences (e.g., stigma) students with exceptionalities may encounter, which can be termed "ADHD stigma perceptions", has also been found to influence the quality of teacher-student relationships ((Bell, Long, Garvan, & Bussing, 2011; Kos, Richdale, & Hay, 2006). Given the frequency with which Attention-Deficit/Hyperactivity Disorder (ADHD) is being diagnosed in children and adolescents, current and future teachers are likely to encounter several students with this disorder over the course of their careers (Ohan, Cormier, Hepp, Visser, & Strain, 2008). Children and adolescents with ADHD are at greater risk of experiencing difficulties within the school environment, including

learning challenges, poor peer relations, and negative relationships with teachers (Rogers, Belangér-Lejars, Tosete, & Heath, 2015). Such difficulties are maintained and further exacerbated by the stigmatization this population endures from peers, teachers, and society at large (Müller, Fuermaier, Koerts, & Tucha, 2012). As such, recent research efforts have been directed towards examining teachers' understanding of the stigma that students with ADHD may experience (Kellison, Bussing, Bell, & Gravan, 2010). While this attribute has been previously examined in in-service teacher populations (Bell et al., 2011), no study to date has explicitly examined stigma perceptions in pre-service teachers. For teachers to effectively meet the learning and social needs of students with ADHD, they should be both sensitive towards and knowledgeable about the negative experiences and stigmas associated with this disorder prior to setting foot in the classroom (Kos et al., 2006). As such, further investigation should be undertaken to assess if future educators are attuned to such stigma, and as such, equipped to effectively foster the academic success and social development of this student population.

The purpose of the present study is to examine pre-service teachers' empathy levels and perceptions of stigma experienced in ADHD, and the possible relation between these variables. Understanding these attributes in teachers who have yet to practice could inform teacher-training programs in terms of developing psychological skills that will benefit pre-service teachers' well-being and competence once they actively engage in the education system. This paper will first discuss empathy in the context of teaching. An overview of the etiology of ADHD and the stigma associated with this disorder will follow. Finally, this paper will present results from the current study, a discussion of findings, and implications of the project.

Chapter 2: Literature Review

Empathy

Quality teacher-student relationships have been found to promote academic achievement and social development in school-aged children and adolescents (Corcoran & Tormey, 2012; Hutchinson, 2007). Empathy, the ability to apprehend and adequately respond to the affective experiences of others, has been identified as a key psychological attribute that can influence the quality of relationships teachers develop with students (Barr, 2013; Baron-Cohen & Wheelwright, 2004; Cooper, 2004). Spreng and colleagues (2009) further operationalize this capacity by distinguishing between an affective dimension of empathy and a cognitive dimension. *Affective empathy,* also referred to as emotional empathy*,* involves experiencing an emotional reaction to another's affective state (Spreng et al., 2009). This type of empathy is facilitated by a mental process referred to as *affective perspective-taking*, which involves inferring the feelings or emotions another individual is experiencing (Healey & Grossman, 2018). An individual is said to be experiencing affective empathy when, for example, they experience sadness after a close friend informs them that they themselves are sad due to having been recently fired. Importantly, affective empathy differs from sympathy as the latter involves being concerned for the welfare of another individual, however not necessarily a sharing of emotions (Eres, Decety, Louis, & Molenberghs, 2015).

Cognitive empathy refers to an intellectual apprehension of another's affective state whereby one arrives at a cognitive understanding of why another individual is experiencing distress by engaging in a process termed *cognitive perspective-taking* (Spreng et al., 2009). This cognitive process involves taking on the perspective of another individual and inferring their thoughts or beliefs (Galinsky, Maddux, Gilin, & White, 2008; Healey & Grossman, 2018). An

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individual is said to be experiencing cognitive empathy when, for example, a friend informs him that he is sad due to having recently been fired from his job. This individual then processes such information and arrives at an understanding of why his friend would be saddened by his current circumstance, however the individual himself does not experience a state of sadness.

The distinction that exists between the two dimensions of empathy can be further illustrated by considering how an individual exercising affective empathy versus one exercising cognitive empathy respond to the same situation. For instance, if a student were to approach his teacher and inform him that he is overwhelmed by his current workload, a teacher demonstrating affective empathy would experience this student's emotional state such that the teacher would also feel overwhelmed. In contrast, a teacher exercising cognitive empathy would take on the student's perspective and through doing so, understand why the student is feeling overwhelmed, however the teacher himself would not experience such affective state.

Importantly, the nature of the relationship an individual has with the person under distress has been found to influence the type of empathy an individual will experience towards that person (Meyer et al., 2012). More specifically, affective empathy is often experienced when an individual observes a person who they have close ties with in a state of distress, such as observing a friend or romantic partner in a worried state (Meyer et al., 2012; Nordgren, Banas, & MacDonald, 2011). In contrast, cognitive empathy is often elicited when an individual observes a person who they do not share an emotional connection with, such as an acquaintance or stranger, experiencing distress (Meyer et al., 2012; Nordgren, Banas, & MacDonald, 2011).

Measurement of empathy. Researchers have used a wide-range of empirically validated approaches to examine human empathy, including self-report, behavioural, and neuroscientific measures (Neumann, Chan, Boyle, Wang, & Westbury, 2015). Self-report measures, which

remain the frontline methodological approach adopted to evaluate this disposition, include paper-and-pencil measures (Melchers, Montag, Markett, & Reuter, 2014). Researchers utilize this approach when they are interested in examining participants' general empathic abilities (Melchers et al., 2014). Importantly, there exists significant variability across self-report measures in terms of how they conceptualize and assess empathy (Spreng, McKinnon, Mar, & Levine, 2009). Specifically, certain measures exclusively examine the affective dimension of empathy, such as the Multidimensional Emotional Empathy Scale (MDEES; Caruso & Mayer, 1998), whereas others solely assess the cognitive dimension of this capacity, such as the Hogan Empathy Scale (HSE; Hogan, 1969).Additionally, measures have been developed to assess empathy as a broad capacity, inclusive of both affective and cognitive dimensions, such as the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers et al., 2011). Importantly, the use of self-report questionnaires that assess both the affective and cognitive dimensions of empathy remains the frontline approach adopted by researchers examining this construct.

Behavioural measures of empathy include evaluations of participants' responses to empathy-inducing stimuli, such as a video clip depicting an individual in distress (Melchers et al., 2014). This methodological approach differs from self-report measures such that the former mode of measurement assesses specific empathic abilities, whereas the latter examines empathy as a broad capacity (Neumann et al, 2015). There exists significant heterogeneity however across behavioural measures in terms of the specific subcomponent of empathy they are designed to assess (Melchers et al., 2014). Behavioural measures have been developed to assess a wide-range of specific empathic abilities such as emotion recognition (e.g., identifying human emotion from facial expressions; Golan, Baron-Cohen, & Hill, 2006), perspective taking (e.g., adopting another individual's point-of-view; Galinsky et al., 2008), and attribution of intention (e.g., how well one

can correctly assess other individuals' mental states; Brunet, Sarfati, Hardy-Baylé, & Decety, 2000).

Neuroscientific measures of empathy include brain imaging techniques and other assessments of central nervous system activity (Neumann et al., 2015). Functional magnetic resonance imaging (fMRI) is the most common neuroscientific approach used to assess this capacity. By adopting this approach, researchers are able to obtain a high-resolution image of activity levels in neuroanatomical structures that are associated with empathy (Neumann et al., 2015). While neuroscientific assessments allow for an objective measure of human empathy to be obtained, due to the high costs associated with the use of such measures, most studies do not adopt such approach (Neumann et al., 2015).

In light of the time and cost effectiveness of self-report questionnaires, such methodological approach remains the frontline approach researchers adopt to assess empathy in their respective populations of interest. Nonetheless, additional empirically validated methodological approaches have been developed and previously implemented to examine this construct, including both behavioral measures and neuroscientific measures.

Teacher empathy. Given its centrality to human functioning, empathy has been researched extensively across various human service and social science disciplines (Lam, Kolomitro, & Alamparambil, 2011). A primary focus of the research undertaken in this area has been on examining empathy levels in helping professionals, as this capacity is essential to the overall quality of care that these individuals provide through their respective roles (Stephany, 2015). Historically, research efforts in this domain have primarily been directed towards examining empathy levels in physicians (Fernández-Olano, Montoya-Fernández, & Salinas-Sánchez, 2008; Klitzman, 2008), psychiatrists (Reynolds & Scott, 2000), nurses (Ancel, 2006),

and psychologists (Marci, Ham, Moran, & Orr, 2007). In addition, there has been growing interest particularly among educational researchers to examine empathy levels in both pre-service and in-service teachers (Williams, 2010).

Tettegah and Anderson (2007) operationalize the use of empathy in the context of teaching as a teacher taking on the perspective of a student who is under distress, understanding why they are experiencing such affective state, and expressing concern accordingly. By exercising empathy, teachers are able to view a presenting dilemma from students' perspectives and, in turn, identify what students may be feeling in regards to the situation (Tettegah & Anderson, 2007). Importantly, the dimension of empathy (e.g., affective or cognitive) teachers experience in response to a student in distress is influenced by a multitude of factors, including the nature and severity of the presenting situation, the dynamic of their relationship with the student, and individual differences in brain structure (Banissy, Kanai, Walsh, & Rees, 2012; Barr, 2013). As with other person-centered teacher variables such as warmth, closeness, and involvement, previous research examining empathy in teachers identifies empathy as a critical disposition for teachers to utilize in their respective roles, as it can assist teachers in fostering and maintaining positive relationships with students (Bostic, 2014; Geng, 2011).

Underscoring the importance of positive teacher-student relationships is that such dynamics have been found to promote students' academic functioning across all grade-levels, and in particular, among high school aged students (Roorda, Koomen, Spilt & Oort, 2011; Warren, 2012). Routinely exercising empathy when interacting with students has also been found to aid teachers in establishing nurturing classroom environments in which students actively participate in class discussions and engage with peers and teachers in a respectful manner (Swan & Riley, 2015; Warren, 2012).

The positive student outcomes associated with empathic teaching practices extend beyond the academic sphere to include improved student functioning in the social-affective domain (Tettegah & Anderson, 2007). Researchers examining empathy in teachers maintain that the empathy teachers display in their interactions with students, and in particular with younger students, largely impacts students' own development of this capacity (Decety & Ickes, 2009). Empathic teaching practices have also been found to promote students' peer relationships and pro-social behaviour in the classroom setting (Goroshit & Hen, 2016; Roorda et al., 2011). Moreover, teachers who exercise empathy in their respective professional roles are more likely to intervene in bullying behavior that occurs in the context of the classroom and school environment, as compared to less empathic teachers (Huang, Liu, & Chen, 2018; Murphy, Tubritt, & Norman, 2018). Several studies examining this construct also show that empathic teachers are better able to manage students who display aggressive behaviour in the classroom setting as compared to their less empathic counterparts (Broomhead, 2013; Schechtman & Tutian, 2012).

Additionally, for teachers working with culturally and linguistically diverse students, an empathic disposition has also been identified as integral to effectively supporting the academic and social development of these students (McAllister & Irvine, 2002; Zhang, 2017). Warren (2014) maintains that exerting empathy when interacting with such student populations serves to decrease teachers' prejudice against marginalized groups and thereby enhance culturally responsive teaching practices. Similarly, it has also been identified as critical for teachers to employ such capacity when working with students with exceptionalities (Cooper, 2011).

Teaching students with exceptionalities. In Canada, educators at all levels use the term "exceptionality" to refer to students with disabilities, as well as learners who are gifted

(Hutchinson, 2007). The term exceptionality is used interchangeably with the term "students with special needs" to refer to students who benefit from special education programming and/or services designed to accommodate their specific learning needs (Hutchinson, 2007). Specifically, empathic teachers have been found to be more effective in meeting the diverse learning needs of students with exceptionalities (Cooper, 2011). Barr (2013) maintains that empathic teachers are better able to engage in perspective-taking, which in turn aids them in understanding diverse students' learning needs and tailoring their support accordingly. Furthermore, students with exceptionalities often require additional learning support from their teachers to effectively complete tasks and meet learning objectives (Cooper, 2011). Providing students with such support, however, requires teachers to invest additional time and resources into these students. An empathic disposition has been found to enhance teachers' willingness to meet the needs of students requiring additional learning support (Cooper, 2011).

In addition to demonstrating an increased willingness to tailor their support to the specific learning needs of students with exceptionalities, empathic teachers have also been found to hold significantly more positive perceptions of such students, as compared to less empathic teachers (Barr, 2013). Specifically, empathic teachers have been found to have fewer misconceptions about students with exceptionalities and higher levels of optimism towards their social and academic potential (Barr, 2013). A salient limitation of research undertaken to examine the association between teachers' empathy levels and their perceptions of students with exceptionalities, however, is that the majority of such studies broadly operationalize students with exceptionalities as any and all students with disabilities that teachers have had experience teaching (Barr, 2013; Parchomiuk, 2018; Platsidou, 2010; Platsidou & Agaliotis, 2017; Sharma, Forlin, & Loreman, 2008). In only a limited number of studies is the type of exceptionality

specified (e.g., ADHD; Cappe, Bolduc, Poirier, Popa-Roch, & Boujut, 2017; Matsushima &

Kato, 2015; Medina & Luna, 1999). Moreover, the majority of studies examining the association

between teachers' empathy levels and their perceptions of students with exceptionalities have

limited their sample to in-service teachers (Cappe et al., 2017; Matsushima & Kato, 2015;

Medina & Luna, 1999; Parchomiuk, 2018; Platsidou, 2010; Platsidou & Agaliotis, 2017), with

very few studies exploring this association in pre-service teachers (Barr, 2013; Sharma et al.,

2008).

Given that students with exceptionalities are a diverse population with varying learning

needs, strengths, and abilities, examining the association between pre-service teachers' empathy

levels and their perceptions of students with particular exceptionalities is a valuable undertaking

that can provide significant insight into the degree to which current and future educators are

equipped to meet the learning and social needs of such students. Specifically, examining the link

between pre-service teachers' empathy levels and their perceptions of students with ADHD may

provide valuable insight that can serve to enhance future training and practice in the field of

education.

Attention-Deficit/Hyperactivity Disorder

ADHD is a neurodevelopmental disability that is characterized by a persistent pattern of

inattentive, hyperactive, and/or impulsive behaviour (American Psychiatric Association [APA],

2013). In accordance with the *Diagnostic and Statistical Manual of Mental Disorders – fifth*

edition (DSM-5; APA, 2013), to be diagnosed with ADHD, symptoms must be present for a

minimum of six months and manifest before the age of 12 years. Three presentations of ADHD

have been identified: (a) predominantly inattentive presentation; (b) predominantly

hyperactive/impulsive presentation; (c) combined presentation (APA, 2013).

Presentations. A diagnosis of ADHD predominantly inattentive manifests behaviourally in individuals as frequently engaging in off-task behaviour, forgetfulness, making careless mistakes, difficulty sustaining attention, becoming easily distracted by environmental stimuli, and difficulty organizing materials or activities (APA, 2013). The DSM-5 specifies that such behaviours must present in a way that is developmentally inappropriate for the child's age, and that inattention must not be attributable to defiance or lack of comprehension. To meet criteria for this subtype, a child must present six of the nine symptoms of ADHD (APA, 2013).

The predominantly hyperactive/impulsive presentation of ADHD manifests behaviourally as excessive motor activity when it is not appropriate, excessive fidgeting, tapping, talkativeness, and interrupting others (Mash & Barkley, 2014). In teens and adults, hyperactivity can also manifest as extreme restlessness (APA, 2013). Impulsivity is defined as sudden, unplanned actions that occur and can potentially cause harm to the individual (APA, 2013). These difficulties can impair individuals' day-to-day life and negatively impact their academic, behavioural, and/or social-affective functioning (Willcutt et al., 2012). As with the predominantly inattentive presentation, an individual must present six of the nine symptoms of predominantly hyperactive/impulsive behaviours to meet criteria for this subtype.

Finally, regarding the combined presentation of ADHD, an individual would meet diagnostic criteria for this subtype when the diagnostic criteria for both predominantly inattentive and predominantly hyperactive/impulsive are met over the previous six months (APA, 2013). The combined presentation of ADHD is the most common subtype among school-aged children, adolescents, and adults (Mash & Barkley, 2014).

Prevalence. ADHD is one of the most frequently identified childhood disorders, with an estimated worldwide prevalence rate of about 5 – 7% in school-aged children (APA, 2013). In

Canada specifically, this disorder is estimated to affect 5% of school-aged children, similar to U.S. rates (Brault & Lacourse, 2012). Estimates of ADHD prevalence are significantly variable (Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2014), although the variability that exists in ADHD prevalence estimates may be attributable to a number of factors, including inconsistent reporting, variations in diagnostic practice, and demographic characteristics of samples (Mash & Barkley, 2014; Polanczyk et al., 2014; Rappley, 2005).

Age of onset. Although ADHD is generally identified during childhood and adolescence, it can first present during preschool years and persist into adulthood (APA, 2013). The DSM-5 specifies that a diagnosis prior to the age of four may be challenging given that it is often difficult to differentiate between the symptomology of ADHD and typical preschooler behaviour (APA, 2013). This disorder often manifests in preschoolers as symptoms associated with hyperactivity-impulsivity subtype, rather than as those linked to the inattentive subtype of this disorder, as difficulties with attention tend to surface when an individual is increasingly required to complete tasks required in a typical classroom setting, such as paying attention to a lesson (Attention-Deficit Subcommittee, 2011). Symptoms of this disorder have been found to become more apparent and impairing during early childhood as children begin to attend more formalized schooling (Nigg & Barkley, 2014). It is during this time period that symptoms linked to the inattentive subtype of ADHD begin to present, in addition to challenges with self-regulation and adaptive functioning (Nigg & Barkley, 2014).

For an estimated 50-80% of children with this disorder, ADHD symptoms continue to present into adolescence (Nigg & Barkley, 2014). The quantity and severity of ADHD symptoms often declines during this time period, and in particular symptoms of hyperactivity-impulsivity begin to reduce (Nigg & Barkley, 2014). Despite this marked decline, the severity and number of

ADHD symptoms adolescents with this disorder experience remains higher than in adolescents without ADHD (Nigg & Barkley, 2014)

The symptoms and behaviours associated with this disorder further decline during adulthood, which is expected given neurological development (Attention-deficit Subcommittee, 2011). ADHD typically manifests in adults as symptoms of inattention (Barkley, Murphy, & Fischer, 2008). Moreover, this disorder only persists into adulthood for an estimated 22-43% of individuals identified with ADHD in childhood or adolescence (Klein et al., 2012). In a recent review of ADHD prevalence rates, it was reported that the current worldwide prevalence rate of adult ADHD is approximately 2.8% (Fayyad et al., 2017).

Gender. ADHD is identified and treated more frequently in males than in females, with a male-to-female ratio of approximately 3:1 (Skogli, Teicher, Andersen, Hovik, & Oie, 2013). Research on gender differences attribute the under-identification and under-diagnosis of this disorder in females to referral bias (Skogli et al., 2013) and to the diagnostic criteria for this disorder failing to encompass all symptoms and behaviours that present in individuals with ADHD. A referral bias has been identified for this disorder such that males are referred for assessment more frequently than females due to the symptoms and behaviours associated with ADHD often manifesting differently in males than in females (Mash & Barkley, 2014). Specifically, females tend to exhibit more internalizing symptoms of this disorder, such as inattention, whereas males with ADHD typically show more externalizing behaviours associated with this disorder, namely hyperactive and impulsive behaviours (Skogli et al., 2013). Given that parents and teachers tend to more easily identify externalizing behaviours associated with this disorder as compared to internalizing behaviours, males are often referred for assessment at higher rates than females (Hinshaw & Blachman, 2005). As noted, the disproportionately higher

rates with which ADHD is diagnosed in males can also be attributed to the diagnostic criteria for this disorder, as such criteria was developed on the basis of predominantly male samples (Mash & Barkley, 2014).

Academic challenges. Many children and adolescents with ADHD experience academic difficulties (Mash & Barkley, 2014). Specifically, this population often finds it challenging to adapt to their classroom environment due to difficulty regulating their emotions and behavior (DuPaul, Weyandt & Janusis, 2011). As such, many children and adolescents with ADHD often engage in disruptive behaviors within their classroom setting, including being physically and/or verbally aggressive towards their peers and/or teachers, consistently seeking attention from their peers and/or teachers, and regularly engaging in off-task (e.g., out-of-chair time) or noncompliant behavior (Steiner, Sheldrick, Frenette, Rene & Perrin, 2014). Engaging in such behaviors has been found to have a detrimental impact on these students' learning and academic performance such that they attain lower grades on standardized tests, have poorer grades, and are generally less productive than their non-ADHD counterparts (Mash & Barkley, 2014; Steiner et al., 2014). Additionally, children and adolescents with ADHD have been found more likely to be expelled, suspended, or repeat a grade compared to their non-ADHD peers (DuPaul et al., 2011).

Teaching students with ADHD. Given the frequency with which children and adolescents are diagnosed with ADHD, current and future teachers will likely encounter several students with this disorder in their classrooms (Ohan et al., 2008). Therefore, teachers are uniquely positioned to recognize and refer students who present with ADHD-type symptoms and behaviours for assessment and treatment, as they spend more time with students than anyone else within the school system (Liang & Gao, 2016). Teachers also play a critical role in carrying out school-based interventions for these students, which, if effectively implemented, can serve to

optimize their learning and promote their pro-social behaviour, both within and outside of their classroom environment (Graczyk et al., 2005).

Special education training (Snider, Busch, & Arrowood, 2003), experience supporting students with ADHD (Ohan, Visser, Strain, & Allen, 2011), and knowledge of this disability (Anderson, Watt, Noble, & Shanley, 2012) are key factors that have been found to influence teachers' perceptions of the ADHD population and as such, the quality of relationships they develop with these students. Teachers' understanding of the stigma students with ADHD may experience, also termed "ADHD stigma perceptions", is identified in the literature as yet another salient factor influencing teachers' perceptions of this student population (Bell et al., 2011). To the author's knowledge, ADHD stigma perceptions have not yet been investigated in pre-service teachers. Given that teachers' awareness of the stigma students with ADHD experience can influence how teachers perceive and thus interact with this student population, further examining this attribute in pre-service teachers would be a valuable undertaking.

Stigma

Stigma is conceptualized as the exclusion from complete social acceptance due to the possession of a particular physical or behavioral trait (Corrigan, 2004). Moreover, such traits are frequently viewed by society as deformities, rather than as individual differences (Wiener et al., 2012). Corrigan (2004) maintains that stigma can be experienced in two ways: public stigma and self-stigma. Public stigma refers to the discrimination and prejudice to which a stigmatized group is subjected. For example, the public may assume that individuals with psychiatric conditions are violent and dangerous. Self-stigma is a by-product of public stigma and refers to when an individual begins to internalize the negative views the public holds towards them (Corrigan, 2004). For instance, when a person with a psychiatric condition internalizes the negative

attitudes and beliefs the public holds towards individuals with such condition. In recent years, a third form of stigma, termed courtesy stigma, has been identified, which refers to the stigmatization that is experienced by family and friends of the stigmatized individual as a result of being affiliated with the targeted individual (Fuermaier, Koerts, & Tucha, 2012; Müller et al., 2012; Pattyn, Verhaeghe, Sercu, & Bracke, 2014). For example, an individual experiences stigma as a result of their sibling having a psychiatric condition. Stigma is experienced by individuals of a variety of backgrounds, including individuals of different races, religions, sexualities, and genders, in addition to those with mental illnesses (Bell et al., 2011).

Stigma and mental illness. Stigma is widely recognized as a barrier to the health and well being of individuals with mental disorders (Cobigo & Stuart, 2010). Relative to the literature on mental health stigma and adults, there is a lack of emphasis placed on examining the impact of stigma on the psychological well being of children and adolescents with mental disorders (Kaushik, Kostaki, & Kyriakopoulos, 2016). The limited literature that exists in this area, however, suggests that children and adolescents with mental disorders, such as mood disorders and ADHD, reportedly experience more stigmatization from their peers than do children and adolescents with learning difficulties and physical disabilities (Bell et al., 2011; Kaushik et al., 2016). In a study examining the stigma experienced by adolescents with a mental disorder, half of the adolescent participants disclosed experiencing stigma from family members, two-thirds from peers, and over one-third reported experiencing stigma perpetrated by their teachers (Moses, 2010). More specifically, these adolescents indicated that they experienced exclusion from family members, were frequently isolated and rejected by peers, and that their teachers often underestimated their academic abilities and intentionally isolated them from their

peers (Moses, 2010). Kellison and colleagues (2010) maintain that stigma can result in three issues: disclosure concerns, negative self-image, and concern with public attitudes.

Disclosure concerns. Disclosure concerns refer to individuals worrying about how they may be perceived by others if they disclose their diagnosis (Kellison et al., 2010). Individuals with a diagnosed mental disorder, and in particular adolescents, often avoid revealing their diagnosis to others as they fear that doing so may negatively impact their peer relationships (Moses, 2010). Furthermore, the fear that individuals with a mental disorder experience surrounding the disclosure of their diagnosis has been found to lead such individuals to socially isolate themselves from others, which in turn may further exacerbate their psychiatric condition (Wahl, 1999). Finally, disclosure concerns can lead to decreased treatment-seeking and premature discontinuation of treatment, as such apprehension leads individuals to refrain from seeking out the necessary supports and services to overcome their presenting mental health difficulties (Wahl, 1999).

Negative self-image. Individuals may develop a negative self-image as a result of accepting and internalizing the prejudices of others (Müller et al., 2012; Pattyn et al., 2014). Children and adolescents are particularly susceptible to internalizing the negative views that others hold of them, which can have a negative impact on their self-esteem, self-efficacy, and confidence (Corrigan, 1998). Furthermore, there is evidence to suggest that when children and adolescents accept the negative perceptions others have of them, they start to engage in behaviors that are consistent with these views (Heatherton, 2000).

Concerns with public attitudes. Individuals with a mental disorder are often concerned with how the public views them and how they will be treated by the public (Kellison et al., 2010). Researchers have found that individuals with a mental disorder expect to be mistreated by

the public (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). Moreover, many individuals with a mental disorder who have such concerns have had a direct and/or indirect stigmatizing experience in the past (Wahl, 1999). In a review of the stigmatizing experiences of individuals with a mental disorder, the majority of people reported having either overheard or witnessed others being subjected to hurtful remarks about mental illness, having had such negative remarks directed at them, or seeing a negative representation of mental illness in the media (Wahl, 1999).

Stigma and ADHD. The stigma that is experienced by individuals with ADHD is an area that remains largely under-researched (Kellison et al., 2010). The limited research that has been carried out in this domain suggests that the degree of stigmatization individuals with ADHD experience may be more severe than that of which is experienced by individuals with other mental disorders, such as depression (O'Driscoll, Heary, Hennessy, & McKeague, 2012). Moreover, children and adolescents with ADHD are subjected to stigmatizing attitudes more often than adults with the disorder (Bell et al., 2011). Research into peers' and teachers' perceptions of children and adolescents with ADHD highlights the degree to which these individuals are subjected to stigmatizing attitudes (Batzle, Weyandt, Janusis, & DeVietti, 2010; O'Driscoll et al., 2012).

O'Driscoll and colleagues (2012) presented adolescents with case vignettes describing same-aged peers as presenting with ADHD, depression, or normal behaviour. Of the three types of vignette cases that were presented, participants reported experiencing the most intense feelings of anger and indicated wanting the greatest social distance from peers who were described as presenting with ADHD symptoms and behaviours. Additionally, the majority of participants indicated that they perceived peers with ADHD behaviours as more responsible for their behaviour than those described as presenting with symptoms of depression. Law and

colleagues (2007) carried out a similar study with children. Participants were first presented with a vignette case describing a same-aged peer as presenting with symptoms of ADHD. Participants then completed a self-report measure of their attitudes and behavioural intentions towards the described peer. Results indicated that the majority of participants viewed the peer in a predominantly negative light (e.g., used terms such as "careless", "crazy", and "stupid" to describe the peer). Additionally, the majority of participants also reported a reluctance to engage with this peer socially.

While no control or comparison vignette was included in the aforementioned study conducted by Law and colleagues (2007), these researchers compared their findings to previous studies that had included the same self-report measure of attitudes/behavioural intentions in their design as they included in their study. Participants in the study conducted by Law and colleagues (2007) endorsed significantly more negative attitudes/behavioural intentions towards their peer compared to the attitudes of participants in a study where participants were presented with a vignette case describing a same-aged peer with obesity (Bell & Morgan, 2000). Similarly, participants in the study conducted by Law and colleagues (2007) reported significantly more negative attitudes/behavioural intentions compared to participants in a study where participants were presented with a vignette case describing a same-aged peer with autistic-like behaviours (Swaim & Morgan, 2001).

The implications of experiencing such stigmatization extends beyond peer rejection to include lower levels of class participation and school attendance, academic underachievement, and an increased risk of dropping out of school (Eisenberg & Schneider, 2007). Moreover, teachers of children and adolescents with ADHD have been found to hold more negative perceptions of the academic abilities of students with ADHD as compared to their non-ADHD

counterparts. Eisenberg and Schneider (2007) carried out a study in which teachers of students with ADHD completed a series of surveys on their perceptions of these students' academic abilities, while controlling for a learning disability co-morbidity. Teachers' perceptions were substantially more negative for ADHD-diagnosed girls, as compared to their non-ADHD female counterparts. Moreover, teachers also disclosed holding negative perceptions towards ADHD-diagnosed boys; however, their perceptions towards this population were less negative than those held towards ADHD-diagnosed girls.

Teachers often also report feeling pessimistic about teaching students with ADHD, as they perceive this student population as requiring additional instructional time and effort (Anderson et al., 2012; Batzle et al., 2010; Eisenberg & Schneider, 2007; Kauffman, Lloyd, & McGee, 1989; Ohan et al., 2011; Ohan et al., 2008). These studies also indicated that teachers often view students with ADHD in a less favorable light than non-ADHD students. Batzle and colleagues (2010) sought to examine whether teachers' perceptions of children's behaviour, intelligence, and personality varied as a function of the presence or absence of an ADHD label. The hypothetical child was presented to participants as having no label (control condition), an ADHD label, or an ADHD with stimulant treatment label. Teachers then completed a self-report questionnaire assessing their perceptions towards the described child. Across all three domains of interest (e.g., behaviour, intelligence, and personality), teachers rated the child with an ADHD label or ADHD with stimulant treatment label significantly less favourably than the child with no label.

There is a general lack of consensus regarding the factors that serve to elicit and maintain the public's stigmatizing attitudes towards individuals with ADHD (Hinshaw, 2005). Müller and colleagues (2012) propose several factors contribute to this phenomenon. The first factor relates

to the lack of consensus that exists within the mental health field regarding the etiological basis

of ADHD. It is theorized that this lack of consensus influences the general public to question

whether ADHD is in fact a psychiatric disorder, which in turn further exacerbates the

stigmatization of individuals with ADHD (Müller et al., 2012). A second contributing factor is

that the symptoms and behaviours associated with ADHD are largely perceived by the public as

being under the individual's control and as such, the public holds individuals with ADHD

accountable for their behaviour. Müller and colleagues (2012) suggest a third factor contributing

to the stigmatization is the length of time with which ADHD presents, as ADHD persists

throughout the lifespan; disorders that present with life-long difficulties have been found to be

more severely stigmatized by the public than those associated with short-term difficulties. A final

contributing factor is that the media often portrays ADHD in a predominantly biased, inaccurate,

and negative manner. For example, the media strengthens misperceptions and stigmatizing

beliefs about ADHD by portraying this disorder as one that primarily impacts young white

middle-class boys and which manifests as hyperactive behavior. Given that the media serves as

the frontline source of information on ADHD for parents, portraying this disorder in a negative

light may be serving to further perpetuate the stigmatizing attitudes the public holds towards this

population (Müller et al., 2012; Schmitz, Filippone, & Edelman, 2003).

  Perceptions of stigma experienced in ADHD. The lack of unanimity amongst mental

health practitioners and researchers regarding the presentation and etiology of ADHD may

influence the general public to underestimate the severity of this disorder and as such, the extent

to which ADHD can impair individuals' cognitive and social-affective functioning. Pescosolido

and colleagues (2008) investigated public attitudes towards children and adolescents with ADHD

by systematically reviewing findings from the National Stigma Study – Children (NSS-C), which

was the first nationally representative American study of public response to child mental health

problems. An American adult community sample was recruited for the purpose of the NSS-C. It

was found that a majority of participants do not view ADHD as a serious condition nor one that

requires individuals to seek out treatment. Additionally, one in five respondents disclosed that

they do not consider ADHD to be a mental illness. Rejecting the label of mental illness is

problematic as it may influence the public to underestimate the extent to which an ADHD

diagnosis can negatively impact an individual's psychological well-being and overall

functioning. Moreover, it can mislead the public to believe that this population does not

experience challenges to the same degree as individuals with other disorders (Pescosolido et al.,

2008).

As previously noted, the degree to which an individual understands the negative

experiences (e.g., stigma) that may result from an ADHD diagnosis can be termed "ADHD

stigma perceptions" (Bell et al., 2011). Being attuned to the stigma faced by individuals with

ADHD may be an important precursor to eliminating such stigma. Considering that ADHD

symptoms are often most noticeable in the classroom setting where students are expected to

remain focused and on-task, there is a clear need for stigma research to be conducted in

educational settings (Bell et al., 2011). Further underscoring the importance of such research is

that teachers' perceptions of students with ADHD likely influences their interactions with this

student population, which in turn can impact how other students perceive and interact with their

peers who have an ADHD diagnosis (Atkinson, Robinson, & Shute, 1997). To date, a limited

number of studies have been conducted to examine teachers' ADHD stigma perceptions and the

factors that influence and serve to maintain such perceptions in in-service teachers (Bell et al.,

2011; Canu & Mancil, 2012; Gilmore, 2010; Kos et al., 2006; Sciutto, Terjesen, & Frank, 2000).

In-service teachers' ADHD stigma perceptions. Bell and colleagues (2011) examined ADHD stigma perceptions in an in-service teacher population by having teacher participants complete the ADHD Stigma Questionnaire (ASQ; Kellison et al., 2010), a scale that assesses individuals' overall ADHD stigma perceptions. Results indicated that teachers did not believe a substantial amount of stigma is experienced by individuals with ADHD. Teachers also reported that they did not believe individuals with ADHD are excessively concerned with how they are perceived by the public (e.g., concerns with public attitudes). Additionally, teachers who hold a special education degree were found to be more aware of the stigma individuals with ADHD may experience as compared to teachers who hold a general education degree (Bell et al., 2011). Importantly, although special education teachers averaged a higher score on the ASQ than general education teachers, both teacher samples nonetheless endorsed scores in the average range, indicating they have only a moderate degree of awareness of the stigma individuals with ADHD may experience. ASQ scores range from 1 to 4, with 1 indicating a limited awareness of the type and degree of stigmatization individuals with ADHD are subjected to, and 4 indicating a comprehensive understanding of such stigma (Bell et al., 2011). Ideally, the teachers in this study would have endorsed a score closer to 4 on the ASQ scale, as understanding the range and intensity of challenges students with ADHD may encounter as a result of their diagnosis promotes teachers' ability to effectively support the learning and development of this student population (Bell et al., 2011).

In addition to the type of teacher-training program that teachers complete, teachers' ADHD stigma perceptions may also be impacted by their prior experience working with students with this disorder (Canu & Mancil, 2012). More specifically, ADHD-specific experience may lead to higher levels of knowledge of this disorder, which in turn may serve to enhance teachers'

awareness of the stigma experienced by those with ADHD (Gilmore, 2010). A number of studies have identified a positive association between in-service teachers' prior experience working with students with ADHD and their knowledge of this disorder such that the more experience a teacher has supporting this student population, the more knowledge they have of ADHD (Kos et al., 2006; Sciutto et al., 2000).

Pre-service teachers' ADHD stigma perceptions. No study to date has explicitly examined pre-service teachers' awareness of the stigma students with ADHD may encounter. Given that the literature identifies ADHD-specific experience as a factor that may impact in-service teachers' ADHD stigma perceptions, it is more likely that pre-service teachers would have a limited understanding of the stigma students with this disorder may encounter, as they may have had limited experience supporting this student population. Pre-service teachers' understanding of the stigma that students with ADHD may experience is a factor that has not yet been explored in the literature, and a greater understanding of this attribute would provide insight into future educators' ADHD stigma perceptions prior to their field experience influencing such perceptions. Ultimately, examining pre-service teachers ADHD stigma perceptions could inform teacher-training programs in terms of developing psychological skills that will further prepare future educators to excel in their respective roles.

Relationship between Teachers' ADHD Stigma Perceptions and Empathy

It is possible that in addition to the aforementioned factors, teachers' ADHD stigma perceptions may also be influenced by their empathic capacities (Barr, 2013). As previously noted, in the context of teaching, empathy is conceptualized as a teacher's ability to express concern and take on the perspective of the student (Tettegah & Anderson, 2007). Teachers' capacity to exercise empathy in their interactions with students is facilitated by their ability to

engage in perspective taking (Galinsky et al., 2008; Rankin, Kramer & Miller, 2005). Through exercising this capacity, an empathic teacher may be better able to take on the perspective of their students with ADHD and in turn, identify potential challenges these students may encounter as a result of their disorder. Furthermore, empathic teachers have been found to be better able to manage the disruptive behaviour with which students with ADHD often present, such as being physically and/or verbally aggressive towards peers and/or teachers, being frequently off-task, or distracting peers (Steiner et al., 2014). The association between teachers' empathy and their perceptions of the stigma experienced by students with ADHD has not yet been explored. Research that has been undertaken to examine the relation between teachers' empathy and their perceptions of students with exceptionalities, however, serves to substantiate the potential link between teachers' empathy and their ADHD stigma perceptions (Barr, 2013).

Barr (2013) sought to examine the association between pre-service teachers' levels of empathy and their attitudes towards students with exceptionalities, operationalized as students with any form of physical, developmental, and/or behavioural disability. It was found that increased empathic functioning in pre-service teachers was associated with increased positive attitudes toward students with exceptionalities. Specifically, increased perspective taking in pre-service teachers was found to be associated with higher levels of optimism and lower levels of hopelessness in regards to students with exceptionalities and their academic and social potential. Additionally, increased perspective taking in pre-service teachers was also found to be associated with lower misconceptions in regards to how disabilities can impact individuals' functioning. One notable shortcoming of this study, however, is that it examined the association between pre-service teachers' empathy levels and their perceptions of all students with exceptionalities by operationalizing the term exceptionality as students with any form of physical, behavioural, or

developmental disability. Given, however, that pre-service teachers' perceptions of students with exceptionalities vary as a function of the specific type of exceptionality students have, future research should be carried out to examine the association between empathy levels in pre-service teachers and their perceptions of the stigma students with specific disabilities, such as ADHD, may experience.

Current Study

The present study aimed to examine pre-service and in-service teachers' empathy levels and perceptions of stigma experienced in ADHD, and the relation between these variables. Due to a low survey response rate from in-service teachers, however, changes to the methodological design of the study were made. As such, the present study examines only pre-service teachers' empathy levels and perceptions of stigma experienced in ADHD and does not include an in-service teacher component. As well, the relation between these variables was explored. Examining these attributes in future educators could inform teacher-training programs in terms of developing psychological skills that will benefit pre-service teachers' well-being and competence once they actively engage in the education system.

Teachers play an integral role in fostering students' academic and social development (Corcoran & Tormey, 2012). As such, research efforts have been directed towards examining factors that influence teachers' ability to effectively promote their students' learning and personal development (Tettegah & Anderson, 2007). Empathy is a psychological trait that has been found to impact the quality of relationships teachers develop and maintain with students, which in turn can influence their students' academic success and social development (Barr, 2013). While this capacity has been previously explored in teacher populations, the majority of such studies have specifically examined empathy levels present in-service teachers, with only a

limited number of studies evaluating empathy in pre-service teachers. Examining empathy in future educators can provide valuable insight into the extent to which teacher-training programs enhance this capacity in teachers and as such, prepare them to effectively meet their students' diverse learning needs.

This study will also examine pre-service teachers' understanding of the negative experiences associated with an ADHD diagnosis. Although this attribute has been previously examined in in-service teachers (Bell et al., 2011), no study to date has explicitly investigated pre-service teachers' awareness of the stigma students with ADHD may experience. For teachers to effectively meet the learning and social needs of students with ADHD, however, they must be both sensitive towards and knowledgeable about the negative experiences and stigmas associated with this disorder. As such, a better understanding as to whether future educators are attuned to such stigma, and thus equipped to effectively foster the academic success and social development of these students is needed. Ultimately, examining this attribute in a pre-service teacher population will provide valuable insight into the extent to which teacher-training programs prepare educators to effectively meet the diverse learning needs of their students. As such, the current study aims to address the following questions:

1. What are the self-reported levels of empathy in pre-service teachers?

2. What level of stigma do pre-service teachers perceive is experienced by those with ADHD? What are their perceptions regarding the disclosure concerns, negative self-image, and concerns of public attitudes experienced in ADHD?

3. How does empathy levels relate to the perceptions of stigma experienced in ADHD in pre-service teachers?

In relation to the first research question, only a limited number of studies have been carried out to examine levels of empathy in pre-service teachers (Bariş 2016; Barr, 2013; Tettegah & Anderson, 2007; Torres, Bonilla, & Moreno, 2016). The results of such studies indicate pre-service teachers demonstrate empathy levels in the above-average range, as determined by self-report measures assessing both the cognitive and affective dimensions of empathy. As such, in line with previous research, it is hypothesized that pre-service teachers in the present study will also endorse empathy levels in the above-average range.

Regarding the second research question, no studies to date have examined pre-service teachers' perceptions of the stigma experienced in ADHD. Research examining in-service teachers' awareness of the stigma individuals with ADHD may experience, however, has found that experience working with students with ADHD can enhance teachers' understanding of the stigma individuals with this disorder may encounter (Bell et al., 2011; Canu & Mancil, 2012; Gilmore, 2010). Given that pre-service teachers have limited experience supporting students with ADHD as compared to in-service teachers, it is predicted that pre-service teachers in this current study will perceive those with ADHD as experiencing a lower degree of stigma than has been reported by in-service teachers in previous studies examining such attribute.

In relation to the third research question, as previously noted, both empathy and being attuned to the stigma faced by individuals with ADHD involve exercising a cognitive capacity termed perspective-taking (Barr, 2013; Galinsky et al., 2008). As such, in line with previous findings, it is hypothesized that higher empathy levels will be associated with an overall increased awareness of the stigma individuals with ADHD may experience.

Chapter 3: Methodology

This study is part of a larger research project examining teacher strengths and abilities across a wide-range of domains. Only the details pertinent to the current study are outlined here.

Participants

Thirty-three pre-service teachers enrolled in a bachelor program in education participated in this study. These 33 pre-service teachers were recruited from a total population of approximately 600 pre-service teachers. Of these 33 pre-service teachers, 11 were enrolled in a concurrent bachelor degree program, 17 in a continuous bachelor degree program, and five in an after-degree bachelor program. The majority of participants were female (84.8% of the total sample). One of 33 participants did not specify their gender. The mean age for females was 27.36 years ($SD = 5.73$) and 23.25 years ($SD = 1.71$) for males. Regarding previous teaching experience, the majority of participants indicated having no prior teaching experience (69.7% of the total sample). Furthermore, 27.3% of the sample specified having prior experience teaching students who exhibit hyperactive and/or inattentive behavior, and 9% indicated having experience teaching students who have been formally diagnosed with ADHD. Additional information was gathered regarding participants' ethnicity. Demographic information is displayed in Table 1.

PRE-TEACHER EMPATHY AND ADHD STIGMA PERCEPTIONS

Table 1
Demographic Information

Variable	Pre-Service Teachers (*N* = 33)			
	n	*%*	*M*	*SD*
Age			26.90	5.47
Male			23.25	1.71
Female			27.36	5.73
Gender				
Male	4	12.1		
Female	28	84.8		
Other	1	3.0		
Ethnicity				
White/Caucasian	26	78.8		
Asian	3	9.1		
Hispanic	2	6.1		
Other	2	6.1		
Type of B. Degree				
Concurrent	11	33.3		
Continuous	17	51.5		
After-Degree	5	15.2		
Prior Teaching Exp.				
Yes	10	30.3		
No	23	69.7		
Exp. with inatt/hyper.				
Yes	9	27.3		
No	24	72.7		
Exp. with ADHD				
Yes	3	9.0		
No	30	91.0		

Note. M = Mean. SD = Standard Deviation. Type of B. Degree = Type of Bachelor's Degree. Prior Teaching Exp. = Prior Teaching Experience. Exp. with inatt/hyper. = Previous experience teaching students who exhibit hyperactive and/or inattentive behaviors. Exp. with ADHD = Previous experience teaching students who have been formally diagnosed with ADHD.

Measures

Participants independently completed an online survey. The survey included measures related to demographics, empathy, and perceptions of individuals with ADHD. The following section provides an explanation of the measures used.

Demographic Questionnaire. All participants were required to complete a demographic questionnaire. Individuals were asked to provide information on their age, gender, program, and teaching experience. The questionnaire also asked participants to provide an estimate of their GPA, list scholarships they have received, and indicate their perceived level of confidence in their academic pursuits. Additionally, participants were asked to specify if they have previous experience teaching students who exhibit hyperactive and or/inattentive behaviours, or who have been formally diagnosed with ADHD.

Toronto Empathy Questionnaire (TEQ). The TEQ (Spreng et al., 2009) is a self-report questionnaire used to measure the affective dimension of empathy. The TEQ was developed to create a measure that assesses empathy as a unidimensional construct, as existing self-report measures of this construct examine empathy as a multidimensional construct. Furthermore, given the significant heterogeneity among empathy researchers regarding the conceptualization of this construct, there exists considerable diversity among empathy measures in terms of the specific dimensions of empathy each tool measures. Therefore, the TEQ was developed to create a tool that encompasses the common features across existing cognitive and affective empathy measures.

The TEQ is comprised of 16-items on a 5-point Likert scale (0 = Never, 4 = Always). Eight of the 16 items in this scale are reversed scored. A total score is calculated for the TEQ by summing the individual items, and can range from 0 to 64. The TEQ contains questions assessing multiple facets of affective empathy, including sympathetic physiological arousal, altruism, emotional contagion, and emotion comprehension (Spreng et al., 2009). Four items specifically assess sympathetic physiological arousal, which refers to the physiological manifestation of experiencing affective empathy (e.g., *I become irritated when someone cries*;

Spreng et al., 2009). Three items measure altruism, which is defined as the principle or practice

of engaging in a behavior with the purpose of enhancing the welfare of others (e.g., *I enjoy*

making other people feel better; Batson, Ahmad, Lishner, & Tsang, 2016). Two items assess

emotional contagion, which is the phenomenon where observing another's emotional state

ignites the same emotion in oneself (e.g., *When someone else is feeling excited, I tend to get*

excited too; Spreng et al., 2009). One item measures emotion comprehension, which refers to the

capacity to understand others' emotions based on their facial or bodily cues (e.g., *I can tell when*

others are sad even when they do not say anything; Göbel, Henning, Möller, & Aschersleben,

2016). The remaining six items included in the TEQ examine affective empathy on a broad level

by measuring the respondents' assessment of emotional states in others (e.g., *Other people's*

misfortunes do not disturb me a great deal). Importantly, while the TEQ was developed to assess

the affective dimension of empathy, the TEQ has been found to be positively correlated with the

Perspective Taking subscale on the Interpersonal Reactivity Index (IRI; Davis, 1983), which is a

subscale that measures the cognitive component of empathy (Spreng et al., 2009). The

association that exists between the TEQ and the IRI's Perspective Taking subscale suggests that

while the TEQ is an affective measure of empathy, it encompasses elements of a cognitive

measure of empathy.

Spreng and colleagues (2009) reported on the psychometric properties of this scale. The

TEQ has been found to have generally sound psychometric properties. A high internal

consistency was reported for this measure, with a Cronbach's coefficient alpha ranging from

0.85 to 0.87. The test-retest reliability for this scale was also found to be sound at $r = 0.81$. Totan

and colleagues (2012) provided further psychometric support for this measure by assessing the

TEQ's validity and reliability in a sample of 698 Turkish university students. Results revealed a

sound internal consistency coefficient and test-retest reliability coefficient for this measure, with

values of 0.79 and 0.73, respectively. Most recently, Kourmousi and colleagues (2017)

evaluated the TEQ's validity and reliability in a sample of 3955 in-service teachers. A high

internal consistency was again reported for this scale, with a Cronbach's coefficient alpha of

0.72.

ADHD Stigma Questionnaire (ASQ). The ASQ (Kellison et al., 2010) was developed

by adapting the human immunodeficiency virus (HIV) Stigma Scale (Berger, Ferrans, &

Lashley, 2001), which is a measure that assesses the stigma experienced by individuals with

HIV. This scale was adapted to measure the perceptions of stigma experienced by individuals

with ADHD. The revised version included 27 items on a 4-point Likert scale (1 = strongly

disagree, 4 = strongly agree). It is comprised of three subscales: disclosure concerns, negative

self-image, and concern with public attitudes.

The disclosure concerns subscale is comprised of seven items and it assesses the

perceptions of the types of worries individuals with ADHD experience regarding revealing their

diagnosis to others (e.g., *Worry that others may judge them*). The negative self-image subscale is

comprised of six items and it examines how others believe individuals with ADHD feel about

themselves as a result of their diagnosis (e.g., *Feel set apart and isolated*). The concern with

public attitudes subscale is comprised of 13 items and it assesses the perceptions of how

individuals with ADHD are treated by the general public (e.g., *People are afraid of someone

with ADHD*).

Kellison and colleagues (2010) reported on the psychometric properties of this scale.

Overall, the ASQ is considered to have sound psychometric properties. This scale was found to

have good internal consistency, with a Cronbach's coefficient alpha of 0.93. The individual

subscales were also reported to have sound internal consistency (Disclosure Concerns: $\alpha = 0.83$;

Negative Self-Image $= \alpha = 0.80$; Concern with Public Attitudes: $\alpha = 0.84$). The test-retest

reliability for all three subscales was measured over the course of a 2-week interval and was

found to be adequate. Bell and colleagues (2011) provided further psychometric support for the

ASQ by evaluating this measure's internal consistency in a sample of 268 American teachers. A

high internal consistency was again reported for this scale, with a Cronbach's coefficient alpha

of 0.93.

Procedure

Students currently enrolled in a bachelor's program in education at a post-secondary

urban institution in Western Canada were recruited through in-class invitations, posters, emails,

and notifications delivered via the university's online learning platform. To participate in this

study, students had to be 18 years of age or older. Partaking in this study involved completing an

online survey on the survey software *Qualtrics^{TM}* at the participant's convenience. The survey

link along with a brief description of the study was distributed to participants via email and the

university's online learning platform. Upon clicking the survey link, participants were directed to

a page in which they were presented with the informed consent letter (see Appendix A) and

asked to indicate if they wished to proceed with completing the survey. Participants provided

their consent by clicking the "Next" button prior to beginning the survey.

Participants first responded to a series of demographic questions, and subsequently

completed the TEQ and ASQ. Upon completing these measures, participants' responses were

recorded by the software and they were directed to a debriefing page that presented them with a

brief summary of the study. This study received approval from the university's Conjoint

Faculties Research Ethics Board (see Appendix B for certificate of ethics approval).

Chapter 4: Results

First, cases with more than 20% of missing responses were removed from the data set via listwise deletion. Data was then analyzed for normality using histograms, Q-Q plots, skewness, and kurtosis. This evaluation revealed that the data was approximately normally distributed. Finally, to assess for extreme outliers, standardized values were created. No extreme outliers were identified from the TEQ or the ASQ, as all standardized values for both measures were within normal limits (e.g., +/- 3.29; Tabachnick & Fidell, 2013). Alpha level .05 was applied to all statistical tests, unless otherwise noted

Research Question One

To examine the first research question, TEQ data was analyzed. The possible range of TEQ scores is 0 to 64, with higher scores representing higher levels of empathy. A mean score was calculated for participants ($M = 50.18$, $SD = 5.98$). A TEQ score of 50.18 is considered an above-average score on the TEQ scale (Spreng et al., 2009).

Research Question Two

To examine the second research question, ASQ data was evaluated. Scores ranged from 1 (Strongly Disagree) to 4 (Strongly Agree). Higher scores on the ASQ scale represent greater perceptions of stigma experiences. Participants' overall mean ASQ score, and mean scores across the three ASQ subscales, are displayed in Table 2.

Levene's test was used to assess for homogeneity of variance. This test was found to be non-significant, indicating homogeneity of variance. Sphericity was also examined prior to conducting this analysis to determine if the variances between all combinations of the variables of interest (e.g., participants' overall mean ASQ score and mean scores on each of the three ASQ subscales) were equal. Mauchly's test of sphericity showed that this assumption was met, χ^2 (2)

= 2.82, *p* = ns. To correct for multiple comparisons, the Bonferroni correction ($\alpha B = \alpha/k$, where k

is the number of comparisons and $\alpha = .05$; Tabachnick & Fidell, 2013) was applied. This

correction resulted in a *p* value of .0167 (.05/3). This correction is necessary to reduce the risk of

detecting a significant result by chance (Type I error).

A one-way repeated measures Analysis of Variance (ANOVA) was conducted to

determine if there were differences in participants' perceptions of stigma in ADHD across the

three ASQ subscales. The results of this ANOVA showed that there was a significant difference

between participants' scores on the three ASQ subscales, ($F(2, 64) = 37.41, p < .01, \eta_p^2 = .54$).

Post hoc analyses using the Bonferroni correction revealed that participants' mean score on the

ASQ negative self-image subscale (*M* = 2.91, *SD* = .42) was higher than their mean score on the

ASQ disclosure concerns subscale (*M* = 2.76, *SD* = .40); t(32) = -3.65, *p* < .01. Participants'

mean score on the ASQ negative self-image subscale was also found to be higher than their mean

score on the ASQ concerns with public attitudes subscale (*M* = 2.50, *SD* = .43); t(32) = 7.58, *p* <

.01. Furthermore, participants' mean score on the ASQ disclosure concerns subscale was higher

than on the ASQ concerns with public attitudes subscale; t(32) = 5.49, *p* < .01.

Table 2.
Mean ADHD Stigma Perception Scores.

	ASQ Overall	NSI[a]	DC[b]	CPA[c]
Pre-Service Teachers (*N* = 33)	2.68 (.38)	2.91 (.42)	2.76 (.40)	2.50 (.43)

Note. Standard deviations are in parentheses.
[a]NSI = Negative Self-Image
[b]DC = Disclosure Concerns
[c]CPA = Concerns with Public Attitudes

Research Question Three

To address the third research question, a bivariate correlation explored the relation

between the TEQ and ASQ. For these analyses, the mean ASQ overall score and mean scores for

the individual subscales were included. The correlation matrix is displayed in Table 3. There was

a weak correlation found between participants' mean TEQ score and the mean score on the ASQ

concerns with public attitudes subscale, r(33) = .33, $p < .05$. No other significant correlations

were found.

Table 3
Correlation Matrix between the ASQ and TEQ

	NSI	DC	CPA	[a]TEQ MS
ASQ Overall	.888*	.921*	.939*	.264
NSI		.818*	.721*	.168
DC			.788*	.207
CPA				.332*

*Correlation is significant at the .05 level
[a]TEQ MS = Toronto Empathy Questionnaire Mean Score

A multivariate linear regression analysis was conducted to determine if the mean TEQ

score predicted the ASQ overall score, negative self-image, disclosure concerns, and/or concerns

with public attitudes subscales. For this analysis, the mean TEQ score was set as the independent

variable, and the ASQ overall score, disclosure concerns, negative self-image, and concerns with

public attitudes subscales ($n = 33$) were set as dependent variables. The overall model was not

found to be significant, $F(4, 28) = 1.230$, $p = $ ns; Wilk's $\Lambda = 0.851$, partial $\eta^2 = .149$. Specifically,

the mean TEQ score was not found to be a significant predictor of the mean ASQ overall score

($F (1, 31) = 2.315$; $p = $ ns; partial $\eta^2 = .069$), ASQ disclosure concerns subscale ($F (1, 31) = $

1.382; $p = $ ns; partial $\eta^2 = .043$), ASQ negative self-image subscale ($F (1, 31) = .902$, $p = $ ns;

partial $\eta^2 = .028$), or ASQ concerns with public attitudes subscale ($F (1, 31) = 3.845$, $p = $ ns;

partial $\eta2 = .110$).

Chapter 5: Discussion

The purpose of the present study was to contribute to the research on empathy and stigma perceptions in ADHD by examining these variables among pre-service teachers. Specifically, this study investigated prospective teachers' levels of empathy, and the amount of stigma they believed is experienced by individuals with ADHD. The following research questions were posed: (1) What are the self-reported levels of empathy in pre-service teachers? (2) What level of stigma do pre-service teachers perceive is experienced by those with ADHD? (3) How does empathy relate to the perceptions of stigma experienced in ADHD? The following section will discuss the results of this study in detail.

Research Question One

The first research question examined pre-service teachers' self-reported empathy levels. It was hypothesized that, in line with previous research, pre-service teachers would endorse empathy levels in the above-average range (Bariş 2016; Barr, 2013; Tettegah & Anderson, 2007; Torres et al., 2016). This hypothesis was supported, as the sample mean for the TEQ was 50.18, which is considered an above-average score on this scale. Findings from the current study are in alignment with previous literature examining empathy levels in prospective teachers. In a study examining empathy levels in Colombian pre-service teachers, participants also endorsed above-average empathy levels (Torres et al., 2016). In a similar study, which investigated the empathic functioning of Turkish pre-service teachers, participants also endorsed high empathy levels (Bariş 2016). Stephany (2015) suggested that, given the degree of patience and compassion that teaching requires, individuals who are highly empathic in nature often choose to pursue this vocation. This rationale may account for the above-average empathy levels reported by pre-

service teachers both in this study and in previous studies (Bariş, 2016; Barr, 2013; Tettegah & Anderson, 2007; Torres et al., 2016).

This suggestion put forth by Stephany (2015) is further supported by findings from past studies that have examined in-service teachers' empathy levels. Findings from these studies converge to suggest in-service teachers generally endorse above-average empathy levels on self-report measures assessing this capacity (Goroshit & Hen, 2016; Kourmousi et al., 2017; Stojiljković, Djigić, & Zlatković, 2012; Stojiljković, Todorović, Đigić, & Dosković, 2014). For example, Goroshit and Hen (2016) examined the empathy levels of Israeli in-service teachers, and participants were found to endorse above-average empathy levels, which is in line with this present study's findings. More recently, Kourmousi and colleagues (2017) assessed the empathy levels of Greek in-service teachers, and participants were also found to endorse empathy levels in the above-average range.

While the results of the current study corroborate with results from previous studies that have examined empathy levels in prospective teachers, the majority of such studies have employed a self-report survey design, which provides limited insight into the degree of empathic concern this population is likely to demonstrate when interacting with students in real-world settings, such as in the classroom environment. By contrast, findings from studies that have examined empathy in pre-service teachers by having participants complete behavioral measures may provide more insight into the extent to which this population will exercise their empathic capacity when engaging with students in real-world settings. Behavioral measures of empathy differ from self-report measures such that the former mode of measurement assesses individuals' responses to specific empathy-eliciting scenarios, whereas the latter examines empathy as a broad capacity (Neumann et al, 2015). As such, it is critical to consider how findings from this

present study and previous studies that have adopted a self-report survey design to examine empathy in pre-service teachers compare to findings from studies that have administered a behavioral measure to explore this construct.

Few studies have administered behavioral measures to assess prospective teachers' empathic abilities (Huang et al., 2018; Tettegah, 2007; Tettegah & Anderson, 2007). Results from these studies nonetheless converge to suggest this population demonstrates limited empathic concern when presented with empathy-eliciting scenarios involving students. For example, Tettegah (2007) found pre-service teachers expressed limited empathic concern in response to web-delivered animated vignettes depicting an incident of low-level aggressive behaviour between students (e.g., name-calling, eye-rolling, etc.), when asked how they would manage the presenting scenario. Furthermore, when compared to the high level of empathy prospective teachers self-report, this population exhibits a relatively lower degree of empathy on behavioural measures assessing this disposition (Huang et al., 2018; Tettegah, 2007; Tettegah & Anderson, 2007).

No studies to date have specifically examined the factors that may be contributing to the inconsistency in pre-service teachers' empathy scores across different methodological approaches. Previous studies that have explored the convergent validity across self-report and behavioral measures of empathy in the general population, however, provide some insight into this phenomenon. For example, Melchers and colleagues (2014) examined the compatibility of self-report and behavioral measures of empathy in a sample of the general population and found limited convergence in participants' scores across measures. The researchers largely attribute such incongruence to how each mode of measurement operationalizes and thus assesses empathy, further specifying that self-report measures assess individuals' self-perception of their

general empathic abilities, whereas behavioral measures assess specific empathic abilities (e.g., empathic response to a specific empathy-inducing scenario). Additionally, individuals' scores on self-report measures of empathy may be disproportionately high compared to their performance on behavioral measures due to a social desirability bias (Neumann et al., 2015), or the respondents' tendency to answer questionnaire items in a manner that will be viewed in a favorable light by others (Lovett & Sheffield, 2007). Given that empathy is regarded as a socially desirably trait in society, individuals may endorse higher empathy levels on self-report questionnaires than what is actually representative of their inherent empathic disposition (Neumann et al., 2015).

Research Question Two

The second research question sought to examine the amount of stigma that prospective teachers believe is experienced by individuals with ADHD. Prior experience working with students with ADHD has been identified in the literature as a factor that can enhance teachers' awareness of the stigma individuals with ADHD may experience (Bell et al., 2011). When compared to practicing teachers, pre-service teachers' have limited field experience, including limited experience working with students with ADHD. As such, it was predicted that the overall sample would perceive those with ADHD as experiencing a lower degree of stigma than has been previously reported by in-service teachers. The sample's overall mean ASQ score was 2.68 out of 4, which falls between "Disagree" (2) and "Agree" (3). When compared to Bell and colleagues (2011), who found that in-service teachers averaged 2.41 on the ASQ, the current sample of pre-service teachers believe a similar degree of stigma is experienced in ADHD.

Given that research into ADHD stigma perceptions remains limited, it is challenging to ascertain why the stigma perceptions of prospective teachers in the current study are comparable

to the stigma perceptions reported by practicing teachers in the study conducted by Bell and colleagues (2011). One plausible explanation is that the pre-service teachers in the present study may have completed field placements where they worked with students with ADHD, which in turn deepened their understanding of the challenges this population may encounter. Through working with children and adolescents with ADHD, prospective teachers may have gained exposure to the lived experiences and difficulties this student population faces. Furthermore, in-service teachers' knowledge of and attitudes towards ADHD has been found to improve as they gain more experience working with this student population (Bekle, 2004).

While pre-service teachers in the current study perceive those with ADHD as experiencing a similar amount of stigma as is reported by practicing teachers, both samples endorsed believing that this population encounters only a moderate degree of stigma. It remains well documented in the literature, however, that individuals with ADHD experience a high degree of stigma; they are frequently perceived by the public as careless and lazy (Law et al., 2007), are often disliked by their peers (O'Driscoll et al., 2012), and/or feel judged or mistreated by their families or communities (DosReis, Barksdale, Sherman, Maloney, & Charach, 2010). As such, future educators would benefit from receiving ADHD-specific training and experience supporting this student population through their pre-service field placements prior to their entrance into the field. Ultimately, completing this specialized training may support teachers in more effectively meeting the learning needs and promoting the social development of students with ADHD.

Research Question Three

The third research question investigated how pre-service teachers' empathy levels related to their perceptions of ADHD stigma. It has been established in the literature that both empathy

and the attunement to the stigma individuals with exceptionalities face involves exercising one's affective and cognitive perspective-taking capacity, respectively (Barr, 2013; Galinsky et al., 2008; Healey & Grossman, 2018). It was anticipated that higher empathy levels would be associated with an increased awareness of the stigma individuals with ADHD experience. In the present study, there was a weak, positive correlation between the TEQ scale and the ASQ concern with public attitudes subscale. However, no additional associations were found between the self-reported empathy levels of pre-service teachers and their ADHD stigma perceptions. Importantly, while an association was found between the empathy levels of prospective teachers in the present study and their perceptions of how the general public views individuals with ADHD (the ASQ concern with public attitudes subscale), this finding should be interpreted with caution given the weak nature of this association.

No studies to date have examined the association between prospective teachers' empathic functioning and their ADHD stigma perceptions. As such, an explanation for this finding may be drawn from previous studies that have examined empathy levels in pre-service teachers and its association with their perceptions of students with exceptionalities more generally (e.g., students with any form of physical, developmental, or behavioural disability). Generally speaking, highly empathic pre-service teachers have been found to have a more accurate understanding of how individuals' functioning across life domains is impacted by their respective disabilities, as compared to less empathic teachers (e.g., Barr, 2013; Steiner et al., 2014). This trend may account for the weak, positive association found in the current study between pre-service teachers' empathy score and their score on the ASQ concern with public attitudes subscale. Specifically, having a sound understanding of how disabilities can impact individuals'

functioning may facilitate prospective teachers' ability to accurately identify how the public perceives individuals with a disability, such as individuals with ADHD.

In the current study, pre-service teachers' empathy levels was not found to significantly predict their overall awareness of the stigma individuals with ADHD may encounter. This finding was surprising, given that perspective-taking is said to be linked to both of these attributes. Specifically, affective perspective-taking is said to elicit affective empathy, which was the dimension of empathy assessed in this study (Healey & Grossman, 2018), meanwhile cognitive perspective-taking facilitates the understanding of the stigma encountered by individuals with an exceptionality (Barr, 2013). Furthermore, individuals with well-developed perspective-taking skills are equally able to engage in affective perspective-taking as they are in cognitive perspective-taking (Healey & Grossman, 2018). Therefore, it may be expected for empathy and ADHD stigma perceptions to be related. This finding, however, suggests that factors other than empathy may more closely relate to and predict pre-service teachers' ADHD stigma perceptions.

For example, prior ADHD-specific training is one such factor that may be more closely tied to prospective teachers' awareness of the stigma this population encounters. Bell and colleagues (2011) investigated ADHD stigma perceptions in both general and special education teachers. Results indicated that compared to general education teachers, special education teachers believe a greater amount of stigma is experienced by individuals with ADHD. Bell and colleagues (2011) posit that the in-depth knowledge about exceptionalities that special education teachers acquire through their teacher-training programs likely accounts for their increased awareness of stigmatization.

Implications

The current study provides valuable information that may help inform future studies on psychological attributes in prospective teachers. Additionally, results from the current study serve to inform how teacher-training programs could be improved to better equip future educators to meet the diverse demands of their roles. First, pre-service teachers in the present study endorsed high empathy levels, which aligns with findings from previous studies (Bariş 2016; Barr, 2013; Tettegah & Anderson, 2007; Torres et al., 2016). Moreover, past studies that have investigated this capacity in in-service teachers have also found practicing teachers to endorse high levels of empathy (Goroshit & Hen, 2016; Kourmousi et al., 2017; Stojiljković et al., 2012; Stojiljković et al., 2014). As such, the results in this sample suggest that teachers' empathic disposition may be an inherent capacity that remains fixed as they advance through their careers, rather than one which develops as a function of teaching experience.

Interestingly, while pre-service teachers generally self-report high levels of empathy, they demonstrate relatively low empathy levels in studies that use behavioral tasks to measure this disposition. As previously noted, behavioral tasks assess the degree of empathic concern pre-service teachers' exhibit in response to an empathy-inducing hypothetical scenario involving a student in distress (Huang et al., 2018; Tettegah, 2007; Tettegah & Anderson, 2007). Future research may wish to examine the factors that may account for why this population self-reports high levels of empathy, but demonstrates relatively lower levels of empathic concern in response to 'real-world' simulations of students in distress. Identifying these factors is critical, as it may serve to inform teacher-training programs on how to further prepare prospective teachers to exercise their empathic capacity when interacting with students. Furthermore, identifying these factors can inform schools of additional training that practicing teachers can benefit from

completing that may serve to deepen their understanding of the theory and application of empathic teaching practices.

Second, the current study holds implications for pre-service teachers' training regarding ADHD. The results of this study suggest that pre-service teachers believe individuals with ADHD encounter a moderate degree of stigma. Given, however, that children and adolescents with ADHD have been found to experience a high degree of stigmatization from their teachers (Batzle et al., 2010), fellow peers (Law et al., 2007), and society at large (Müller et al., 2012), in order for teachers to effectively meet the learning needs of this student population, it is important for future educators to be both sensitive towards and knowledgeable about such stigma prior to their entrance into the field. Experience working with students with ADHD has been identified as a key factor influencing teachers' ADHD stigma perceptions (Bell et al., 2011; Flanigan, 2016). Specifically, extensive experience working with this student population has been found to be associated with a heightened awareness of the stigma encountered by individuals with ADHD (Bell et al., 2011; Flanigan, 2016). As such, teacher-training programs should consider providing ample opportunity to prospective teachers to acquire field experience working with students with ADHD, such as by offering field placements and volunteer opportunities at specialized schools/classrooms for students with ADHD, among other exceptionalities.

Contact with children and adolescents with ADHD and their families, has also been found to reduce individuals' stigmatizing views towards this population (Couture & Penn, 2003). Specifically, in-person contact with individuals with ADHD, as opposed to viewing a videotaped account of their lived experiences, has been found to enhance individuals' awareness of the stigmatization this population is subjected to (Corrigan, Morris, Michaels, Rafacz, & Rusch, 2012). As such, teacher-preparation programs should aim to provide prospective teachers

opportunities to interact with students with ADHD and their families. For example, teacher-preparation programs can encourage prospective teachers to attend and/or volunteer at community support groups for children and adolescents with ADHD and their families.

In addition to providing teachers in training with opportunities to work with students with ADHD and their families, including ADHD-specific units in the general education teacher-training program curriculum may also serve to broaden their awareness of potential stigma. Previous literature suggests that teachers holding a special education certification have a heightened awareness of the stigma individuals with ADHD face, as compared to general education teachers (Bell et al., 2011). Researchers attribute these discrepancies between teacher populations to special education teachers having more in-depth knowledge of ADHD, as they complete teacher-preparation courses that focus on how disabilities, including ADHD, impact learning and overall functioning, and how to best support students with exceptionalities in the classroom setting (Bell et al., 2011).

Finally, the positive, albeit weak, association found between prospective teachers' levels of empathy and their understanding of the awareness of how individuals with ADHD are treated by the general public, has implications for teacher-training programs. This association suggests highly empathic pre-service teachers are more aware of how individuals with ADHD are stigmatized by the public, as compared to their less empathic counterparts. Both affective empathy and being attuned to the stigma individuals with exceptionalities face is facilitated by one's affective and cognitive perspective-taking capacity, respectively (Barr, 2013; Galinsky et al., 2008; Healey & Grossman, 2018). Moreover, teachers who routinely exercise their perspective-taking capacity have been found to have a more in-depth understanding of diverse students' learning needs and tailoring their teaching approach accordingly (Cooper, 2011).

Following, teacher-training programs should provide future educators with formal instruction on the theoretical underpinnings and advantages of exercising their affective and cognitive perspective-taking capacity when engaging with students. Additionally, prospective teachers may benefit from completing exercises as part of their training that serve to further develop their affective and cognitive perspective-taking abilities.

Limitations

Although the present study has several strengths, it is not without its limitations. First, the size of the sample was limited ($n = 33$). Use of a small sample size can be problematic as it limits the statistical power of the analyses (Tabachnick & Fidell, 2013). A study's statistical power is a numeric value that denotes the likelihood that a statistical analysis will detect relationships between data points (Kerlinger & Lee, 2000). Due to sample size having a direct influence on statistical power, a smaller sample size makes finding significant associations more difficult to detect among the sample (Tabachnick & Fidell, 2013). Therefore, the probability of finding a significant relationship is reduced. An additional limitation regarding the sample of this study is the composition of the sample. Specifically, the sample was primarily comprised of female participants, (84.8% of the total sample), which limits the generalizability of this study's findings. Nonetheless, given that the Canadian elementary and secondary school in-service teacher population is predominantly female (84% and 58.6%, respectively), the current study's pre-service teacher sample is representative of this population (Statistics Canada, 2011). Additionally, there was significant variability across participants in terms of their age, with participants' ages ranging from 21 to 46 years. Past research shows age-related differences in empathy across the life span such that this capacity further develops as individuals' progress through life stages and into old age (Decety & Ickes, 2009). Following from this, the uneven age

distribution observed in the current sample may have influenced the results, specifically in terms of impacting the average TEQ score.

Another limitation relating to the sample composition of this study is that it is comprised exclusively of pre-service teachers attending a university in Western Canada. Given that Canadian general education teacher preparation programs vary significantly in terms of the special education training prospective teachers complete, they will likely vary in terms of their understanding of the stigma experienced in ADHD. As such, the composition of the current study's sample limits the degree to which results can be generalized to Canadian pre-service teachers completing their training at other institutions. Furthermore, the composition of the present sample also limits the extent to which findings can be generalized to pre-service teachers completing their degree outside of Canada, as the content and structure of teacher-training programs varies across countries.

The generalizability of findings is further limited by the current study's sample being comprised primarily of Canadian pre-service teachers who identify as Caucasian. Previous studies that have examined how empathy varies across cultural groups have found that individuals from collectivist cultures, such as China, Korea, Japan, generally endorse higher levels of empathy than individuals from individualistic cultures, such as Canada. Chopik and colleagues (2017) maintain that collectivist cultures place significant importance on ensuring the welfare of others and the community at large. Such cultural groups exercise and demonstrate a high degree of empathic concern in an effort to promote the well-being of others and their respective communities. By contrast, individualistic cultures have been found to place less emphasis on promoting others' well being, and thus generally exercise their empathic capacity to a lesser extent than their collectivist counterparts (Chopik, O'Brien, & Konrath, 2017).

Following from this, given that the current study's sample is comprised predominantly of Canadian pre-service teachers who identify as Caucasian, the findings from this study may not generalize to pre-service teachers of other cultural backgrounds, and in particular, to prospective educators from collectivist cultures.

Another limitation of this project is the low survey response rate from in-service teachers. While examining psychological attributes in pre-service teachers provided insight into how to better prepare future educators to excel in their respective roles, including in-service teachers would have further enhanced the generalizability of findings and allowed for comparisons between the two groups. Consequently, future research may wish to include both pre-service and in-service teachers, as doing so provides insight into how empathy levels and ADHD stigma perceptions vary as teachers gain more experience in their respective roles.

Third, information regarding past teaching experience was not adequately obtained from participants. Specifically, participants were asked, "Have you ever worked as a teacher?" but further specifying questions were not included. As such, it is possible that only the participants who had previously held paid teaching positions answered "Yes" to this question; however, it is also possible that those who had only completed field placements through their teacher training program may have responded either "Yes" or "No", depending how they interpreted the question. Given the ambiguity of this demographic question, the sample could not be split into two groups based on years of teaching experience to allow for further comparisons (e.g., comparing experienced pre-service teachers versus inexperienced pre-service teachers). As such, future research may wish to include both pre-service teachers who have previous teaching experience (e.g., field placement, paid position) and those without any prior experience.

Fourth, the present study is limited by the measures used. Self-report measures are susceptible to respondent bias, or participants' inclination to respond to items on a survey in a manner that will be viewed favorably by others (Lovett & Sheffield, 2007). Given that both measures included in this study were self-report measures, participants' responses may have been unintentionally biased, resulting in inaccurate reporting of the levels of TEQ and ASQ. Furthermore, although self-report questionnaires remain the frontline methodological approach employed to assess empathy, researchers are increasingly using behavioral tasks to corroborate self-report scores (Neumann et al., 2015). Behavioral tasks assess individuals' responses to specific empathy-eliciting scenarios, such as a video clip depicting a student being subjected to name-calling by a fellow peer (Neumann et al., 2015). A behavioral measure of empathy was, however, not included in the present study. Administering such a task to participants in the current study in addition to the TEQ may have provided further insight into pre-service teachers' empathic disposition, specifically in terms of the degree to which they will exercise this capacity when faced with a real-world incident involving a student under distress.

Lastly, given the recruitment approach (e.g., convenience sampling) that was adopted, results of the current study may have been influenced by self-selection bias, or the bias introduced when it is at the respondents' discretion whether or not they choose to participate in a given study (Lavrakas, 2008). Specific to this study, self-selection bias may have inflated the average TEQ and ASQ scores of the sample, as pre-service teachers who are highly empathetic and knowledgeable about stigma experienced in ADHD may have been more inclined to participate in this study, as compared to their less empathetic and knowledgeable counterparts. Furthermore, self-selection bias can limit how representative the sample is of the population, which in turn hinders the generalizability of results (Lavrakas, 2008).

Future Directions

The current study aimed to understand the relationship between empathy and ADHD stigma perceptions in a sample of Canadian pre-service teachers. While this study provides a degree of insight into this association, further research into this area is encouraged to allow for a more thorough understanding. Future studies should consider administering a behavioral task in addition to a self-report questionnaire to measure empathy, as adopting a multi-method approach provides the most comprehensive understanding of this construct.

Comparing pre-service teachers to in-service teachers is also encouraged, as this may provide insight into how empathy levels and ADHD stigma perceptions vary as teachers advance in their career. Furthermore, future research may wish to consider the possibility of conducting qualitative interviews to examine empathy levels and ADHD stigma perceptions in pre-service teachers, as this may serve to reduce the social desirability and self-promoting responses that are often associated with survey methodology.

Finally, given that classrooms are becoming increasingly diverse, teachers are required to support students presenting with a wide-range of exceptionalities. Consequently, future studies may wish to examine pre-service teachers' awareness of the stigma experienced by students with other forms of exceptionalities, such as students with an intellectual or learning disability. Expanding the understanding of the stigma experienced by other groups may help to improve teachers' attitudes towards students with exceptionalities, which in turn can enhance the quality of their interactions with such students and thereby improve student outcomes (Barr, 2013). Additionally, such an understanding may help motivate teachers to take proactive measures to reduce the stigma students with exceptionalities experience within the classroom and school environment.

Conclusion

The present study aimed to address a gap in the literature by examining pre-service teachers' levels of empathy and perceptions of stigma experienced in ADHD, and the possible relation between these attributes. Results showed no significant association between prospective teachers' empathy levels and their overall awareness of the stigma individuals with ADHD encounter. A weak, positive association was however found between participants' empathy levels and their awareness of how individuals with ADHD are treated by the general public. Furthermore, pre-service teachers in the current sample endorsed high levels of empathy, which aligns with previous literature examining such disposition in this population. Additionally, prospective teachers in the current sample perceive individuals with ADHD as experiencing a moderate degree of stigma. These findings have implications for future research examining psychological dispositions in prospective teachers. Specifically, future research should adopt a multi-method approach to examining levels of empathy in pre-service teachers, as doing so provides a more comprehensive understanding of this capacity. Furthermore, future studies should include both pre-service and in-service teachers in their sample, as such approach provides insight into how teachers' psychological capacities develop as they advance through their careers.

The results of this study also provide valuable insight into how teacher-training programs can be enhanced to further promote prospective teachers' awareness of the stigma students with ADHD encounter, and thus better equip them to support this student population. Direct contact with students with ADHD has been found to broaden teachers' awareness of the stigma this population encounters. As such, programs should provide pre-service teachers ample opportunity to work with students with ADHD, such as by providing the option to complete the field

placement component of their program in a special education classroom/school setting.

Furthermore, training programs should encourage teachers in training to volunteer/attend

community support groups for parents of children with ADHD. Finally, teacher-training

programs may consider including a training-module aimed at enhancing pre-service teachers'

perspective-taking abilities, as exercising this capacity can further develop their awareness of the

stigma encountered by students with ADHD.

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Appendices

Appendix A: Informed Consent

Name of Researcher, Faculty, Department, Telephone & Email:

Ayelet Ary, School and Applied Child Psychology, Werklund School of Education,
ayelet.ary@ucalgary.ca

Supervisor:

Dr. Emma A. Climie, School and Applied Child Psychology, Werklund School of Education,

Title of Project:

Teacher Strengths: Understanding psychological attributes and skills in teachers

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This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

The primary aim of this study is to investigate the relationship between psychological skills among pre-service teachers at the undergraduate level and in-service teachers at the graduate level. This study is also interested in examining the psychological skills of individuals who have already complete their BEd and/or MEd and are currently working as teachers. The specific psychological skills that will be examined in this study include learning and study practices and attitudes, your belief in your ability to succeed in specific situations or accomplish a task (both as an individual and in your role as a teacher), empathy, and emotions. A secondary aim of this study is to better understand teacher perspectives regarding Attention-Deficit/Hyperactivity Disorder (ADHD).

Accurate ADHD stigma perceptions, which represent an individuals' understanding of the negative experiences that may result from a diagnosis of ADHD, has also been identified as an essential factor to establishing and maintaining positive teacher-student relations. Ultimately, collecting information regarding these psychological skills in teachers who have yet to practice or have little experience teaching could inform teacher-training programs in terms of developing psychological skills that will benefit pre-service teachers' well-being and competence once they actively engage in the education system.

What Will I Be Asked To Do?

As a participant of this study you will be asked to complete an online survey in which you will first be asked to provide basic demographic information, such as your age, gender, and educational history. You will then be asked questions designed to measure empathy, self-regulated learning, beliefs, and knowledge of ADHD. This survey will take approximately 40-45 minutes to complete. Please also note that participation is completely voluntary and you have the right to refuse to participate or to withdraw from the study at any time without any form of penalty. You are also entitled to participate in only a part or select parts of the study, and you can decline to answer any and all questions included in the online survey.

What Type of Personal Information Will Be Collected

In order to provide you with access to the online survey as well as debrief you on the study's results, you will be asked to disclose your surname, first name, and email. Providing this information will also allow the researchers of this study to ensure your responses remain confidential by assigning you a random identification number in place of your surname/name. Should you agree to participate, you will also be asked to provide your gender, age, full date of birth, year of birth, and age at time of data collection.

Are there Risks or Benefits if I Participate?

The benefit to you personally is indirect through the sense of satisfaction you may experience in contributing to the larger scientific literature. Additionally, the information you provide through your survey responses can help inform how to improve teacher-training practices, quality of teaching in schools, and teacher well-being.

Given the sensitive nature of the topics addressed in this study, potential risks of participating in this study include minor feelings of psychological or emotional discomfort and psychological or mental fatigue. If this occurs, we strongly recommend you contact Alberta Health Services at 1-877-303-2642 or the University of Calgary's Wellness Centre at 403-210-9355, Option #2 and access appropriate supports and services to help you address the discomfort you are experiencing. If you are a participant that resides in the United States, we strongly recommend you contact Citadel's Counselling Center at 843-953-6799 for support.

You will be compensated for your participation in this study by being entered into a draw to win one of 16 gift cards ($25.00 cash value). You will be notified via email if you have won. Please note that if you withdraw from the study prior to its completion, you will be excluded from this draw.

What Happens to the Information I Provide?

Participation is completely voluntary, anonymous and confidential. You are free to discontinue participation at any time during the study. In the case that you choose to withdraw from the study, the information you contribute up until the point that you withdraw will be destroyed. No one except the primary researchers of this study and authorized research assistants will be allowed to see any of the answers you provide on the survey. There are no names on the survey. Only group information will be summarized for any presentation or publication of results. All survey data is kept in password protected computers only and access is limited to the primary researchers and research assistants involved in this study. This data will be stored for 10 years and only group data will be used for publications (e.g. conference presentations, peer-reviewed journal articles) both now and in the future.

Signatures

Your signature on this form indicates that 1) you understand to your satisfaction the information provided to you about your participation in this research project, and 2) you agree to participate in the research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Ayelet Ary, MSc student
School & Applied Child Psychology, Werklund School of Education
ayelet.ary@ucalgary.ca

Emma A. Climie, Ph.D., R.Psych.
School & Applied Child Psychology, Werklund School of Education

If you have any concerns about the way you've been treated as a participant, please contact the Research Ethics Analyst, Research Services Office, University of Calgary at (403) 210-9863; email cfreb@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form