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Finding 'I' in University: Effects of Psychosocial Intervention on Undergraduates with Attention-Deficit/Hyperactivity Disorder (ADHD) Symptoms

Gordon, Laura L.

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Finding 'I' in University: Effects of Psychosocial Intervention on
Undergraduates with Attention-Deficit/Hyperactivity Disorder (ADHD)
Symptoms

by

Laura L. Gordon

A THESIS

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Abstract

Students with Attention-Deficit/Hyperactivity Disorder (ADHD) are less likely to use academic coping strategies effectively (DuPaul et al., 2009; Kaminski et al., 2006) and less likely to graduate from college (Barkley et al., 2008; Kuriyan et al., 2013). Given that students' sense of belonging to their college is associated with academic persistence/student retention (Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Tinto, 1999), the current study sought to investigate the effects of a six-week group psychosocial intervention, adapted from an adult ADHD cognitive-behavioural therapy (CBT) manual (Safren et al., 2005) on two forms of problem-focused coping (planning/self-management and seeking support from institutional resources) and five components of sense of belonging (perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduate students with ADHD symptoms. An ancillary purpose of the current study was to investigate the relationships between these two problem-focused coping strategies and these five sense of belonging components among undergraduate students with ADHD symptoms. Results indicated that participants reported significantly heightened perceived peer support and significantly lessened feelings of isolation post-intervention. However, no significant differences were indicated on the remaining three sense of belonging components (perceived faculty support, perceived empathetic faculty understanding, and classroom comfort) or either of the problem-focused subscales (planning/self-management and seeking support from institutional resources). Moreover, no associations were found between problem-focused coping and sense of belonging. It was concluded that the group psychosocial intervention significantly improved perceived peer support and reduced feelings of isolation

among undergraduates with ADHD symptoms. Implications and limitations of the current study as well as future directions for research are discussed.

Keywords: Attention-Deficit/Hyperactivity Disorder (ADHD), undergraduate, university, college, students, sense of belonging, problem-focused coping, psychosocial intervention

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Table of Contents

Abstract	ii
Acknowledgements	iv
Table of Contents	v
List of Tables	viii
List of Abbreviations	ix
Chapter 1: Introduction	1
Chapter 2: Literature Review	2
Attention-Deficit/Hyperactivity Disorder (ADHD).....	2
Epidemiology	2
Prevalence	2
Age	3
Gender	4
Diagnostic Classification	5
Predominately inattentive presentation	5
Predominately hyperactive-impulsive presentation	6
Combined presentation	7
Theoretical Underpinnings.....	7
Executive functioning theories	7
Self-regulation of motivation, affect, and arousal theories	10
Development and Course	13
Childhood.....	13
Adolescence	14
Emerging adulthood.....	15
Adulthood	15
Comorbidity	17
Anxiety.....	17
Depression.....	17
College/University Students	18
Challenges and Stressors.....	18
Predictors of Outcomes.....	21
Coping methods	21
Sense of belonging.....	23
Relationships between coping methods and sense of belonging	26
ADHD in College/University Students.....	26
Demographics and Outcomes	26

Challenges and Stressors.....	27
Coping Methods.....	28
Treatment	30
Medication	30
Psychosocial interventions.....	31
Current Psychosocial Intervention	33
Pilot Psychosocial Intervention.....	35
Current Study	36
Research Questions and Hypotheses	38
Research question one.....	38
Research question two	38
Research question three	39
Research question four.....	40
Chapter 3: Methodology	41
Participants.....	41
Measures	43
Demographic Questionnaire	43
Barkley Adult ADHD Rating Scale-Fourth Edition (BAARS-IV; Barkley, 2011).....	43
Coping with the College Environment Scale (CWCES; Ackermann & Morrow, 2007)	45
Sense of Belonging Scale (SOBS; Hoffman, Richmond, Morrow, & Salomone, 2002)	46
Procedure	48
Recruitment.....	48
Chapter 4: Results	49
Research Question One.....	50
Research Question Two	50
Research Question Three	51
Perceived faculty support.....	51
Perceived empathetic faculty understanding	52
Classroom comfort.....	52
Perceived peer support.....	53
Feelings of isolation.....	53
Research Question Four	54
Chapter 5: Discussion	56
Research Question One.....	56
Research Question Two	59
Research Question Three	61
Perceived faculty support.....	62
Perceived empathetic faculty understanding	63

Classroom comfort.....	63
Perceived peer support.....	64
Feelings of isolation.....	65
Research Question Four.....	66
Implications.....	68
Limitations.....	70
Sample limitations.....	71
Research design limitations.....	73
Future Directions.....	74
Conclusions.....	76
References.....	79
APPENDIX A: Demographic Questionnaire.....	97
APPENDIX B: BAARS-IV Self-Report Current Symptoms.....	100
APPENDIX C: Coping with the College Environment Scale (CWCES).....	103
APPENDIX D: Sense of Belonging Scale (SOBS).....	105
APPENDIX E: Recruitment Poster.....	107
APPENDIX F: Recruitment Letter.....	108
APPENDIX G: Informed Consent.....	109

List of Tables

Table 1. Program Information.....	34
Table 2. Demographic Information.....	42
Table 3. Planning/Self-Management Problem Focused Coping Pre- and Post-Intervention.....	50
Table 4. Seeking Support from Institutional Resources Problem-Focused Coping Pre- and Post- Intervention	51
Table 5. Perceived Faculty Support Pre- and Post-Intervention.....	52
Table 6. Perceived Empathetic Faculty Understanding Pre- and Post-Intervention.....	52
Table 7. Classroom Comfort Pre- and Post-Intervention.....	53
Table 8. Perceived Peer Support Pre- and Post-Intervention.....	53
Table 9. Feelings of Isolation Pre- and Post- Intervention	54
Table 10. Kendall's Tau-b Correlations between Forms of Problem-Focused Coping and Components of Sense of Belonging.....	56

List of Abbreviations

ADHD	Attention-Deficit/Hyperactivity Disorder
ADHD-C	Attention-Deficit/Hyperactivity Disorder Predominantly Combined Presentation
ADHD-HI	Attention-Deficit/Hyperactivity Disorder Predominantly Hyperactive-Impulse Presentation
ADHD-I	Attention-Deficit/Hyperactivity Disorder Predominantly Inattentive Presentation
BAARS-IV	Barkley Adult ADHD Rating Scale - Fourth Edition
CBT	Cognitive-Behavioural Therapy
CNS	Central Nervous System
CWCES	Coping with the College Environment Scale
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders (4 th ed., Text Revision; DSM-IV-TR)
DSM-V	Diagnostic and Statistical Manual of Mental Disorders (5 th ed.; DSM-5)
EA	Emerging Adulthood
EF	Executive Function
EFs	Executive Functions
ICD-10	International Classifications of Diseases, Tenth Edition
OTMP	Organization, Time Management and Planning Skills
SCT	Sluggish Cognitive Tempo
SOBS	Sense of Belonging Scale

Chapter 1: Introduction

College can be a stressful time for all students (Pierceall & Keim, 2007), as it is well established that they experience unique challenges and stressors, including academic issues (i.e., getting poor grades, choosing a major), financial concerns, and social strains (i.e., getting along with roommates; Skowron, Wester, & Azen, 2004). Collegiate stress may also result from overwhelming workloads and inefficient time management (Pierceall & Keim, 2007). College students with Attention-Deficit/Hyperactivity Disorder (ADHD) tend to struggle more than the average college student (DuPaul, Weyandt, O'Dell, & Varejao, 2009; Kaminski, Turnock, Rosen, & Laster, 2006; Norvilitis, Sun & Zhang, 2010; Norwalk, Norvilitis, & MacLean, 2008). More specifically, research suggests that college students with ADHD continue to struggle with symptom manifestations, such as poor planning/disorganization, distractibility, difficulties focusing and sustaining attention (Weyandt & DuPaul, 2006), and poor time management skills (Reaser, Prevatt, Petscher, & Proctor, 2007). Unfortunately, students with ADHD are less likely than non-ADHD students to graduate from college (Barkley, Murphy, & Fischer, 2008; Kuriyan et al., 2013). Not receiving a post-secondary education can have negative long-term implications, such as lost occupational opportunities and decreased earning potentials resulting in a lower quality of life. Thus, it is not surprising that in addition to being less likely to graduate from college, adults with ADHD are also more likely to be underemployed in lower-status occupations or unemployed than their non-ADHD peers (APA, 2013; Barkley et al., 2008; Kuriyan et al., 2013).

The primary purpose of the current study was to investigate the preliminary effects of a condensed six-week group psychosocial intervention, adapted from the Safren, Perlman, Sprich, and Otto (2005) adult ADHD CBT treatment manual, on problem-focused coping and sense of

belonging in undergraduates with ADHD symptoms. An ancillary purpose of the current study was to investigate whether relationships between problem-focused coping and sense of belonging observed in the general college population extend to undergraduate students with ADHD symptoms.

Chapter 2: Literature Review

Attention-Deficit/Hyperactivity Disorder (ADHD)

Attention-Deficit/Hyperactivity Disorder (ADHD) is a common neurodevelopmental disorder characterized by a persistent pattern of inattention, hyperactivity, or impulsivity that interferes with functioning and development (American Psychiatric Association [APA], 2013). Inattention can manifest behaviourally as difficulties sustaining focus, lacking persistence, and being disorganized (APA, 2013). Hyperactivity is often characterized by excessive and inappropriate motor activity, excessive fidgeting, and excessive talkativeness (APA, 2013). Impulsivity may present as reckless actions, rash decisions, inability to wait for a delayed reward, and social intrusiveness (i.e., interrupting conversations excessively; APA, 2013).

Epidemiology

Prevalence. ADHD is estimated to occur in approximately five percent of children and nearly three percent of adults (APA, 2013; Hesson & Fowler, 2018). Although a lessened prevalence rate is observed among adults, many children who are diagnosed with ADHD continue to experience impairments during adulthood (APA, 2013; Weyandt & DuPaul, 2006).

Differences in ADHD prevalence rates have been reported internationally, which may be attributed to differences in diagnostic practices (i.e., using the DSM-5 versus the International Classifications of Diseases [10th ed.; ICD-10]; APA, 2013). Furthermore, it is hypothesized that diverse cultural attitudes and interpretations of children's behaviours may contribute to cultural

differences in prevalence rates (APA, 2013). In other words, what is considered behaviourally acceptable in one culture may be regarded as unacceptable in another, impacting assessment referrals, informant ratings, and overall ADHD diagnostic rates (Skounti, Philalithis, & Galanaskis, 2007). Moreover, diagnostic variability has also been observed between different ethnicities. For instance, ADHD diagnostic rates are higher within the Caucasian population than within the African American and Hispanic populations in the United States (APA, 2013). These ethnic disparities have yet to be explained, as the relationship between race and ADHD diagnosis has not been found to be statistically related to an extensive list of potential confounding variables, such as behavioural risk factors and academic achievement (Morgan, Staff, Hillemeier, Farkas, & Maczuga, 2013). Additionally, this diagnostic disparity between Caucasian and ethnic minority children appears to be consistent at different diagnostic developmental periods (Morgan et al., 2013).

Age. ADHD is believed to develop during childhood and is most commonly diagnosed during the elementary school years (APA, 2013). Although parents often notice excessive motor activity when their child is a toddler, symptoms are difficult to discriminate from typical developmental behaviours; thus, ADHD is not typically diagnosed before the age of four-years-old (APA, 2013). A National Survey of Children's Health, conducted in the United States between 2011 and 2012, found that on average, parents reported their children were diagnosed with ADHD at the age of seven-years-old (Centers for Disease Control and Prevention [CDC], 2013). However, it is important to note that this survey used diagnostic criteria from the since outdated *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., Text Revision; DSM-IV-TR), which required ADHD symptoms to be present before the age of seven. The current *Diagnostic Statistical Manual of Mental Disorders* (5th ed.; DSM-5) criteria increased the oldest

onset age of ADHD symptoms from seven to 12-years-old, which could potentially delay the average reported age of diagnosis. Given that an ADHD diagnosis in adulthood still requires a presentation of symptoms in childhood and retrospective recall tends to be problematic, this change was made in part to improve adult ADHD diagnostics (APA, 2013).

Gender. ADHD is more often diagnosed in males than in females (APA, 2013). The male to female ratio in children is an estimated 2:1; however, the gap slightly reduces to an approximate 1.6:1 ratio in adults (APA, 2013). There is a documented ADHD referral bias for boys, as they are more likely to be referred for clinical assessment than girls at an estimated 9:1 ratio (Elia, Ambrosini, & Rapoport, 1999). This bias toward referring males for an ADHD assessment is thought to contribute to the unequal distribution of ADHD diagnoses between the genders (Gershon, 2002) and raises concern that only females who present significant impairment are being clinically referred for diagnosis (Hinshaw, 2002). This referral bias may be associated with the trend that boys most often present externalized ADHD symptoms (i.e., hyperactivity/impulsivity), whereas girls are more likely to exhibit internalized ADHD symptoms (i.e., inattention; APA, 2013). In addition to being under-referred, there is a common misconception that girls who are diagnosed with ADHD are not as functionally impaired as their male counterparts (Rucklidge, 2010). Seeing as females are more likely to be diagnosed with a predominately inattentive presentation (APA, 2013; Biederman et al., 2005), their inattentive symptoms may go undetected until adulthood (Rucklidge, 2010). These combined factors extend a partial explanation to the lessening gap between the male to female ratio who are diagnosed with ADHD in adulthood.

Diagnostic Classification

ADHD is considered a neurodevelopmental disorder, as children with ADHD have been found to have reduced total brain volume on magnetic resonance imaging, in addition to potentially delayed anterior and posterior cortical maturation (Nigg & Barkley, 2014). However, currently, no biological marker is available to diagnose ADHD (APA, 2013). Instead, behavioural observations and descriptions (i.e., rating scales) provided by informants (i.e., parents and teachers) are used by psychologists and physicians to determine whether symptom count and severity meet diagnostic criteria (Skounti et al., 2007). Current DSM-5 diagnostic criteria for ADHD requires symptoms to be present in at least two different environments (i.e., in school and at home); however, symptoms typically vary within different contexts (APA, 2013). In order to be considered clinically significant, symptoms must be more frequent than what is considered developmentally age-appropriate, must persist for a minimum of six months, and result in negative social, academic, or occupational consequences (APA, 2013). As ADHD is a heterogeneous disorder, a diagnosis involves specifying whether the symptom manifestation is either a predominately inattentive, a predominately hyperactive-impulsive, or a combined inattentive and hyperactive-impulsive presentation (APA, 2013).

Predominately inattentive presentation. A predominantly inattentive ADHD presentation (ADHD-I) is the second most common subtype (Skounti et al., 2007). A diagnosis of a predominately inattentive ADHD presentation requires a minimum of six symptoms (five for individuals 17 years and older) of the following nine possible symptoms of inattention: (1) often fails to pay close attention to detail or making careless mistakes in schoolwork, at work, or during other activities (i.e., work is inaccurate, overlooks details); (2) often experiences difficulty sustaining attention in play activities or tasks (i.e., has difficulty remaining focused during

conversations, lengthy lectures, or readings); (3) often does not seem to listen when spoken to directly (i.e., mind seems somewhere else, even in absence of any obvious distraction); (4) often does not follow through on instructions and fails to finish schoolwork, chores, or workplace tasks (i.e., begins a task but quickly loses focus or is easily sidetracked); (5) often experiences difficulty organizing activities and tasks (i.e., difficulty managing sequential tasks, keeping belongings and materials in order, poor time management, fails to meet deadlines); (6) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (i.e., schoolwork or homework, preparing reports, completing forms, or reviewing lengthy papers); (7) often loses things necessary for activities or tasks (i.e., school materials, paperwork, wallet, keys); (8) is often easily distracted by extraneous stimuli (or unrelated thoughts for older adolescents and adults); and (9) is often forgetful in daily activities (i.e., doing chores, running errands, returning calls, paying bills, or keeping appointments; APA, 2013). These symptoms of inattention are commonly associated with academic deficits, school-related difficulties, and peer neglect (APA, 2013). Symptoms of inattention are associated with several underlying cognitive processes (APA, 2013). More specifically, individuals with ADHD may display difficulties on cognitive tests of attention, executive functioning, and memory; however, these tests are not sufficient or specific to diagnose ADHD (APA, 2013).

Predominately hyperactive-impulsive presentation. A hyperactive-impulsive ADHD presentation (ADHD-HI) is the least common subtype (Skounti et al., 2007). A diagnosis of a predominately hyperactive-impulsive ADHD presentation requires a minimum of six symptoms (five for individuals 17 years and older) of the following nine possible symptoms of hyperactivity and impulsivity: (1) often fidgets with, or taps hands or feet, or squirms in seat; (2) often leaves seat in situations when remaining seated is expected (i.e., leaves his or her seat in

the classroom, in the workspace or office, or in other situations that require remaining in one place); (3) often runs around or climbs when it is inappropriate (this may be limited to restlessness in adolescents or adults); (4) often unable to play or engage in leisure activities quietly; (5) is often “on the go,” acting as if “driven by a motor” (i.e., is uncomfortable being, or is unable to be still for extended periods of time, such as in restaurants, meetings; this may be experienced by others as being restless or difficult to keep up with); (6) often talks excessively; (7) often blurts out an answer before a question has been completed (i.e., completes others’ sentences or has difficulties waiting their turn in conversation); (8) often experiences difficulty waiting his or her turn (i.e., waiting in line); and (9) often interrupts or intrudes others (i.e., interprets conversations, activities, or may intrude or take over what others are doing; APA, 2013). These symptoms of hyperactivity and impulsivity are more commonly associated with peer rejection and, to a lesser extent, accidental injury (APA, 2013).

Combined presentation. A combined ADHD presentation (ADHD-C) diagnosis requires a minimum of six symptoms (five for individuals 17 years and older) of the nine possible symptoms of inattention, in addition to six of the nine possible symptoms of hyperactivity and impulsivity (APA, 2013). ADHD-C is the most common subtype (Skounti et al., 2007).

Theoretical Underpinnings

Executive functioning theories. One of the most prominent theories of ADHD suggests that symptoms are behavioural manifestations of executive function (EF) deficits, which are underpinned by neurological disturbances in the prefrontal-striatal neural networks known to regulate attention, inhibition, and intentional behaviour (Doyle, 2006; Sonuga-Barke, 2003; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). Brain lesion and neuroimaging studies

support that most EF tasks activate neural networks involving the prefrontal cortex (Doyle, 2006; Willcutt et al., 2005).

EFs are broadly defined as top-down, higher-order neurocognitive processes that permit the organization of behaviour across time to attain future goals, increasing an individual's immediate functioning and long-term welfare (Barkley, 2010; Sonuga-Barke, 2003). The role that EFs play in ADHD varies by theoretical model (Lee, Riccio, & Hynd, 2006). Barkley (2010) categorized several EFs into the following two domains: (1) inhibition; and (2) metacognition. More specifically, Barkley (2010) described inhibition as the ability to inhibit cognitive, emotional, motor, and emotional responses. Deficits in response inhibition are hypothesized to impact impulse control and delay of gratification, which extends a theoretical explanation for an ADHD H-I presentation (Barkley, 2010). For example, symptoms of hyperactivity and impulsivity, such as excessive motor activity, speech, and vocalizations, may indicate weak behavioural inhibition in children with ADHD (Barkley, 1999).

The metacognition domain comprises of the following EFs: (1) nonverbal working memory; (2) verbal working memory; (3) emotional self-regulation; (4) planning; and (5) problem-solving (Barkley, 2010). Nonverbal working memory is described as the ability to hold information mentally to guide an ongoing performance (i.e., remembering a goal and the steps needed to achieve it; Barkley, 2010). Verbal working memory refers to the internalization of speech, which enables individuals to internally self-direct their behaviour (Barkley, 2010). Emotional self-regulation is the ability to moderate an elicited emotion to make it more socially acceptable and consistent with the individual's goals and welfare (Barkley, 2010). Additionally, the ability to emotionally self-regulate is thought to contribute to self-motivation (i.e., persistence over time toward a future goal without immediate reward; Barkley, 2010). Planning

and problem-solving involve the ability to manipulate information within working memory in order to orient it toward a goal (i.e., first formulating and mentally testing different means of accomplishing a goal, then selecting the most efficient and effective solution, and last adjusting the course of action if any obstacles are encountered; Barkley, 2010). Symptoms of inattention, particularly in adults with ADHD, are hypothesized to stem from deficits in the aforementioned metacognitive EFs (Barkley, 2010). Although metacognition is conceptualized as a different EF domain, response inhibition deficits are posited to be interrelated and contribute to deficits in metacognition (Barkley, 2010). Deficits predicted by Barkley's (1997) model of ADHD include time blindness, difficulties sustaining attention, and inability to direct behaviour toward future goals. EFs have also been associated with academic performance and behavioural adjustment (Sonuga-Barke, 2003); specifically, weaker EF abilities in childhood have been found to predict both academic and social functioning difficulties in adolescence (Miller & Hinshaw, 2010).

A meta-analysis conducted by Willcutt and colleagues (2005) supports that children and adolescents with ADHD exhibit weaknesses in several key EF domains, with the most robust and consistent effects being observed on tasks measuring response inhibition, spatial working memory, vigilance, and some measures of planning. Another meta-analysis found impairments in working memory in children with ADHD, mainly in spatial working memory and moderately in verbal working memory (Martinussen, Hayden, Hogg-Johnson, & Tannock, 2005). Moreover, a meta-analysis investigating EFs in adults with ADHD (Boonstra, Oosterlaan, Sergeant, & Buitelaar, 2005) found that adults with ADHD exhibit weaker inhibition, set-shifting, and verbal fluency skills, suggesting that inhibition may consistently remain impaired in individuals with ADHD across development. It is important to note that the role inhibition has on other EFs, as theorized by Barkley (1997), has yet to be researched (Sonuga-Barke, 2003).

Although ADHD is widely accepted as a disorder of EFs, many individuals with ADHD do not demonstrate impairment on neuropsychological tests measuring EF abilities (Barkley, 2010). For instance, Willcutt and colleagues (2005) concluded that the effect size of the group difference on EF performance-based measures between individuals with and without ADHD was much smaller than the difference between ADHD symptoms. Thus, although atypical scores on neuropsychological measures of EF tend to be predictive of ADHD, typical EF scores on neuropsychological measures poorly predict the absence of ADHD (Barkley, 2010; Lovejoy et al., 1999). Hence, it is comprehensible why neuropsychological measures of EF are not employed in clinical practice to assess and diagnose ADHD. In conclusion, despite existent comprehensive theoretical models of EF deficits in ADHD and meta-analyses finding some consistencies among EF deficits in individuals with ADHD (i.e., working memory and inhibition), the current consensus within the literature is that ADHD is a neuropsychologically heterogeneous disorder (Doyle, 2006). This neuropsychological variability exists due to potential confounding variables in performance on EF tests, such as comorbidity with other psychological disorders and a family history of ADHD (Doyle, 2006).

Self-regulation of motivation, affect, and arousal theories. Unlike EF theories, theories of motivation in ADHD are described as bottom-up (Nigg & Barkley, 2014). These motivation theories tend to focus on altered reward processes that implicate frontal-ventral striatal reward circuits (Sonuga-Barke, 2003). One prominent motivationally-based theory (Sagvolden, Johansen, Aase, & Russell, 2005) proposes two main behavioural processes associated with ADHD: (1) altered reinforcement of novel behaviour; and (2) deficient extinction of previously reinforced behaviour. Both reinforcement and extinction of behaviours are associated with dopamine, which may strengthen or potentiate neuronal connections associated

with reinforced behaviours, meanwhile weakening or extinguishing other neuronal connections associated with nonreinforced behaviours (Sagvolden et al., 2005).

Moreover, Sagvolden and colleagues (2005) propose that hypo-functioning dopamine systems may decrease the amount of time available for children with ADHD, especially those with inattention, to associate behaviours with consequences, which limits the potential for environmental constraints to shape their behaviour (Sagvolden et al., 2005). In addition to deficient behavioural reinforcement, Sagvolden et al. (2005) suggest that hypo-functioning dopamine systems may result in deficient behavioural extinction, which may present as excessive hyperactive and impulsive behaviours, commonly interpreted as response disinhibition (Sagvolden et al., 2005). Overall, Sagvolden et al. (2005) offer an alternative explanation of ADHD symptoms to EF deficits by theorizing ADHD as a behavioural manifestation of inefficient reinforcement of adaptive behaviours and deficient extinction of previously acquired maladaptive behaviours.

Another alternative to EF theories is the motivationally-based theory that ADHD is explained by delay aversion (Sonuga-Barke, 2003). More specifically, Sonuga-Barke (2003) argued that children's inattention, hyperactivity, and impulsivity are attempts to reduce the perceived length of time, and consequently, these ADHD symptoms are behavioural expressions of delay aversion. Previous research has found that children with ADHD have a response bias toward immediate reward, suggesting that ADHD is associated with a hypersensitivity to delayed reward (Tripp & Aslop, 2001). Given that children with ADHD exhibit difficulties waiting for desired outcomes, they overlook future rewards and struggle to work effectively over extended periods of time (Sonuga-Barke, 2003). Overall, the delay aversion theory conceptualizes that impulsivity symptoms are an attempt to avoid delayed reinforcement, rather than an inability to

inhibit a behavioural response (Sonuga-Barke, 2003). Alternatively, the state dysregulation hypothesis proposes that difficulties waiting for reward and lack of persistence in absences of immediate reward are the result of disrupted activation and arousal systems (i.e., cognitive-energetic equilibrium; Sonuga-Barke, 2003; Solanto et al., 2001). ADHD symptoms are characterized in this model as being caused by difficulties modulating physiological state to meet environmental demands (Sergeant, 2000).

Although motivational theories of ADHD are traditionally considered to compete or conflict with EF theories, more recently, these separate theories have been considered complementary models that are both moderated by the dopamine system (Sonuga-Barke, 2003). More specifically, Sergeant (2000) proposed that EFs ultimately control cognitive-energetic resources (i.e., effort), which are necessary for state regulation (i.e., activation and arousal) and are regulated to meet different environmental demands. However, it is currently unfounded in the literature, whether EF dysregulation is related to state dysregulation observed in ADHD (Sonuga-Barke, 2003). Although single core deficit models conceptualize specific aspects of ADHD, more research investigating the relationship between the self-regulatory, motivational, and EF theories is required to sufficiently explain the neurodevelopmental pathways of ADHD (Sonuga-Barke, 2003). Currently, there is only literature to support that dysregulation of cognition (i.e., EFs) and dysregulation of behaviour (i.e., motivation and self-regulation) may develop and function independently of each other, as they may represent separate causal pathways within a more comprehensive multi-pathway model of ADHD (Sonuga-Barke, 2003). In conclusion, current theories of ADHD attempt to fill a theoretical void with limited success (Antshel & Barkley, 2008).

Development and Course

Childhood. In preschool, the primary manifestation of ADHD symptoms is typically hyperactivity and impulsivity, while inattentive symptoms usually become more prominent and impairing later on during the elementary school years (APA, 2013). Thus, it is unsurprising that a predominantly inattentive ADHD presentation is typically diagnosed later on when children are between the ages of eight and 12 years-old (Applegate et al., 1997), while a predominantly hyperactive-impulsive presentation is typically diagnosed younger between the ages of five and eight-years-old (Hart, Lahey, Loeber, Applegate, & Frick, 1995). Children's hyperactive and impulsive behaviours exhibited in preschool are likely to persist in elementary school and are typically accompanied by attention and EF difficulties (Nigg & Barkley, 2014). These attention and EF difficulties may manifest as forgetfulness, distractibility, poor organizational and time management skills, challenges completing assignments, and meeting deadlines (Nigg & Barkley, 2014).

Consequently, ADHD is associated with poorer grades, lower standardized math and reading tests scores, and increased grade retention (Barry, Lyman, & Klinger, 2002). For some children with ADHD, their educational impairment may be related to behavioural issues, such as inattention, restlessness, and distractibility, while others may experience specific deficits that interfere with learning (i.e., math and reading; DuPaul & Langberg, 2014). As a result, ADHD is associated with the increased use of school-based educational support services in addition to increased detention and expulsion rates (Loe & Feldman, 2007). It is typically impaired school functioning, which refers children with ADHD for clinical assessment and diagnosis (Loe & Feldman, 2007).

In addition to educational impairments, a significant number of children with ADHD demonstrate impaired social functioning in their relationships (McQuade & Hoza, 2014). More specifically, symptoms of inattention, such as distractibility and poor listening skills, tend to interfere with children's social skills to respond appropriately to peers and social cues (Cadesky, Mota, & Schachar, 2000). Moreover, symptoms of hyperactivity and impulsivity, such as nosiness, talking excessively, difficulties turn-taking and interrupting conversations, tend to annoy peers (Pelham & Bender, 1982). Not surprisingly, children with ADHD are more likely to be reported as disliked than liked by their peers (Gresham, MacMillan, Brocian, Ward, & Forness, 1998). Moreover, children who are rejected are more likely to be socially isolated with limited social supports, which consequently increases their risk for developing internalizing disorders, such as depression (Bell-Dolan, Reaven, & Peterson, 1993).

Adolescence. Generally, a child's ADHD presentation remains relatively stable in early adolescence (APA, 2013). Although many children's symptoms of hyperactivity (i.e., running and climbing) become less apparent in adolescence, their difficulties with attention, planning, restlessness, and impulsivity (i.e., fidgeting and impatience) tend to persist (APA, 2013). In adolescence, individuals with ADHD are more likely to be impaired in their social competence, emotional regulation, and behavioural adjustment than their peers, and they may experience worsened antisocial behaviours (Barkley, Anastopoulos, Guevremont, & Fletcher, 1991). In addition to social-emotional impairments, the vast majority (75 percent) of educational impairment and school performance in children with ADHD persists into adolescence and adulthood (Barkley et al., 1991; Hechtman, 2000). More specifically, research suggests that children with EF deficits perform poorer academically and are more likely to repeat a grade (Biederman et al., 2004). Furthermore, EF deficits in children with ADHD tend to persist into

adolescence and adulthood (Solanto, 2014). Ultimately, ADHD is associated with higher rates of school dropout, and consequently, lower rates of high school completion and post-secondary education in comparison to individuals without ADHD (Kent et al., 2011; Loe & Feldman, 2007). Overall, there is evidence to support that social-emotional and educational challenges associated with ADHD tend to persist from childhood to adolescence.

Emerging adulthood. Emerging adulthood (EA) is generally defined as the developmental period from late teenage years to mid-twenties, approximately from ages 18 to 25 years-old (Arnett, 2000). Typically, individuals with ADHD have not experienced the full impact of their symptoms on daily adult functioning in their early EA (Knouse & Fleming, 2016). However, as structure and supports decrease, the demand for more autonomy and self-regulation increases, consequently impacting the daily functioning of young adults with ADHD (Knouse & Fleming, 2016). ADHD is associated with continued impaired academic performance in EA in addition to work performance impairments, unemployment, and underemployment in lower-status occupations (APA, 2013; Barkley et al., 2008; Kuriyan et al., 2013). During EA, the stakes are high as young adults make decisions that will impact their life course (Knouse & Fleming, 2016). EA is a stressful developmental period, particularly for young adults with ADHD, as it is associated with an increased risk of suicide attempt, especially with comorbid conduct, mood, or substance use disorders (APA, 2013). In conclusion, as individuals with ADHD enter into EA, increased demands and stressors combined with decreased structure and support, tend to exacerbate their ADHD symptoms with adverse and potentially catastrophic outcomes (APA, 2013).

Adulthood. A substantial proportion of individuals with ADHD remain impaired into adulthood, particularly experiencing difficulties with symptoms of inattention, impulsivity, and

restlessness (APA, 2013). Although hyperactivity may persist into adulthood, it usually manifests as extreme restlessness or wearing others out with their high levels of energy (APA, 2013). Overall, hyperactivity and impulsivity tend to decline across development (Biederman, Mick, & Faraone, 2000), whereas symptoms of inattentive are more likely to be associated with functional impairment in adulthood (Stavro, Ettenhofer, & Nigg, 2007). Adults with ADHD generally have difficulties with self-management, which includes organization, planning, initiating, and completing tasks on time, tracking and shifting tasks, self-monitoring, and self-inhibition (Solanto, 2014). These difficulties with self-regulation manifest as disorganization, poor planning, inefficiency, reduced productivity, careless errors, missed deadlines, forgotten, and lost items (Solanto, 2014). These hallmark challenges associated with ADHD are consequently attributed to failures to achieve personal, academic, and occupational goals across the lifespan (Barkley, 2014). In turn, these failures are thought to contribute to poor mental health outcomes, including high rates of depression and anxiety among adults with ADHD (Kessler et al., 2006). Moreover, poor inhibitory control in adults with ADHD may lead to emotional dysregulation and inappropriate verbal and physical behaviours during social interactions (Solanto, 2014). Consequently, frequent problems with adaptive functioning skills and social skills can strain the interpersonal relationships of adults with ADHD (Wasserstein, Resnick, & Nadeau, 2005). Overall, adults with ADHD are more likely than their non-ADHD counterparts to struggle in many areas of functioning, including ineffective coping strategies, negative attributions about themselves, significantly lower self-esteem, and hopelessness for the future (Rucklidge, Brown, Crawford, & Kaplan, 2007).

Comorbidity

Comorbid disorders commonly occur in individuals with ADHD across the lifespan (APA, 2013). A comorbidity rate derived from a community sample purported that 44 percent of children with ADHD have at least one co-occurring mental health diagnosis, while 43 percent have two or more co-occurring mental health diagnoses (Willcutt et al., 2012). Unsurprisingly, comorbidity rates are even higher among a clinical population, with 80 to 87 percent of children with ADHD estimated to have at least one co-occurring mental health disorder (Kadesjö & Gillberg, 2001). The percentage of comorbid mental health diagnoses is also high in adulthood (65 to 89 percent; Sobanski, 2006). The most relevant comorbid mental disorders to the current study's sample are discussed below; however, it is not uncommon for individuals with ADHD to have a comorbid externalizing disorder, specific learning disorder, or a tic disorder (APA, 2013).

Anxiety. It is common for individuals with ADHD to have a comorbid anxiety disorder, with rates estimated to be approximately 25 percent (Schatz & Rostain, 2006). Although anxiety is a common mental health disorder, adults with ADHD are at an increased risk of developing an anxiety disorder when compared to the general population (APA, 2013). Anxiety has been found to inhibit impulsivity and impair attention in individuals with ADHD (Pliszka, Carlson, & Swanson, 1999). Patients with comorbid ADHD and anxiety disorders in childhood were found to have more severe developmental outcomes, in addition to more significant comorbid mental health diagnoses, including substance use disorders (Manchini, van Ameringen, Oakman, & Figueredo, 1999).

Depression. Depression rates among children with ADHD is estimated to be between 20 and 30 percent (Barkley et al., 2008; Biederman, Faraone, & Lapey, 1992; Cuffe et al., 2001). The risk of developing depression is believed to increase into adolescence and EA (Barkley et

al., 2008). Overall, adults with ADHD are more likely to develop depression (35 to 50 percent) when compared to the general population (15 percent; Biederman et al., 1993). It is believed that the relationship between ADHD and depression may be mediated by emotion regulation deficits associated with ADHD (Nigg & Barkley, 2014). Although both boys and girls with ADHD experience higher rates of anxiety and depression than typically developing children, females with ADHD may be more prone to these internalizing disorders than their male counterparts (Barkley et al. 2008). More specifically, a study that investigated a clinical sample of adults with ADHD found that females with ADHD were more likely to be diagnosed with an affective disorder (49 percent), such as depression in comparison to their male counterparts (28 percent; Rasmussen & Levander, 2009). This overrepresentation of internalizing disorders among females with ADHD may be related to a delay in ADHD-I diagnosis, as missed opportunities for intervention can consequently result in an extended history of failure, misattributions, relationship problems, and feelings of underachievement (Rucklidge, 2010).

College/University Students

Challenges and Stressors

College is a stressful experience for many of its students (Pierceall & Keim, 2007). It is reported that 75 percent of college students are moderately stressed, while another 12 percent are severely stressed (Pierceall & Keim, 2007). Moreover, Hudd and colleagues (2000) found that college students reported high levels of stress (52 percent) during a typical semester. It is well understood that college students experience unique challenges and stressors, including academic issues (i.e., getting poor grades, choosing a major), financial concerns, and social strains (i.e., getting along with roommates; Skowron, Wester, & Azen, 2004). Stress experienced among

college students may also result from overwhelming workloads and inefficient time management (Pierceall & Keim, 2007).

Moreover, various types of collegiate stress result in students' voluntary decisions to withdrawal from their post-secondary institution. More specifically, it has been reported that approximately 35 percent of students voluntarily withdraw from college due to academic reasons (Tinto, 1999). Meanwhile, the other 65 percent of college students withdraw voluntarily for non-academic reasons, including adjustment problems, uncertain goals, lack of commitment, inadequate finances, lack of student involvement, and poor fit to the institution (Tinto, 1999).

It is common for college students to experience adverse academic, physical, psychological, and behavioural side effects related to their collegiate stress (Brougham, Zail, Mendoza, & Miller, 2009). Research suggests that high levels of stress are related to lower grades (Struthers et al., 2000), as these high levels of stress appear to impair academic functioning and performance by interfering with students' abilities to concentrate and learn (Lumley & Provenzano, 2003). Additionally, poor health behaviours have also been associated with high levels of collegiate stress (Brougham et al., 2009). For instance, Hudd and colleagues (2000) found that undergraduate students with high levels of stress reported being less healthy, more prone to practice poor health habits, and having lower levels of self-esteem. More specifically, students who reported experiencing higher stress levels also reported consuming greater amounts of junk food, exercising less, and getting insufficient amounts of sleep (Hudd et al., 2000). In addition to poor physical health behaviours, high levels of collegiate stress have been associated with loss of control (Towbes & Cohen, 1996), decreased life satisfaction (Coffman & Gilligan, 2002; Pritchard, Wilson, & Yamnitz, 2007), physical symptoms, and negative affect (Kim & Seidlitz, 2002; Pritchard et al., 2007). Consequently, increased rates of

anxiety and depression are often associated with high levels of stress in college (Dyson & Renk, 2006; Misra, & McKean, 2000; Towbes & Cohen, 1996). More specifically, Pengilly and Dowd (2000) found that stress predicted a significant amount of variance in the depression rate among undergraduate students. Even more concerning, a study sponsored by the American Foundation for Suicide Prevention found an alarming portion (11 percent) of a large college sample reported current ideation within the past four weeks (Garlow et al., 2007).

Traditional age college students are considered to be young adults between the ages of 18 to 23 years old, whereas non-traditional age students are considered to be 24 years and older (Dill & Henley, 1998). It has been concluded by Dill and Henley (1998) that there are significant differences between traditional and non-traditional age students in their perceptions about stressful events. More specifically, the non-traditional age group reported more stress related to balancing responsibilities and obligations at home (i.e., multiple roles, such as a parent, employee, and student), while the traditional age group reported more worries specific to school performance concerning parental pressures and expectations (Dill & Henley, 1998). However, Pierceall and Keim (2007) did not find a statistically significant difference in the perceived level of stress between traditionally and non-traditionally aged college students. Thus, although traditionally and non-traditionally aged students have reported variability in the factors contributing to their collegiate stress, they report experiencing similar (i.e., moderate) stress levels overall. Although stress levels have been found to be similar among different age groups, research has consistently found female college students to report experiencing more stress than their male counterparts (Brougham et al., 2009; Hudd et al. 2000), despite having similar course demands (hours) and higher-grade point averages (Pierceall & Keim, 2007).

In conclusion, stress among college students is prevalent; in some cases, severe, with potential negative impacts on their academic, physical, and psychological functioning (Brougham et al., 2009). Though traditional and non-traditional age students may experience different stressors in college (Dill & Henley, 1998), they report experiencing similar stress levels overall (Pierceall & Keim, 2007). There is a reported gender difference in collegiate stress, with female students reporting that they experience higher stress levels in college (Brougham et al., 2009; Hudd et al. 2000).

Predictors of Outcomes

Coping methods. Research (Pierceall & Keim, 2007) has found that college students use the following methods to cope with collegiate stress: (1) talk to family and friends (77 percent); (2) participate in leisure activities (57 percent); (3) exercise (51 percent); (4) drink alcohol (39 percent); (5) smoke (37 percent); (6) use illegal drugs (15 percent); (7) do nothing (6 percent); and (8) talk to a professional (5 percent). College students may also attempt to control or reduce their stress through positive reappraisal and religion (Misra, McKean, West, & Russo, 2000). Coping strategies have often been classified into two broad categories: (1) problem-focused, involving behavioural strategies (i.e., planning and action); and (2) emotion-focused, involving expressing emotion (Brougham et al., 2009). Moreover, Carver, Scheier, and Weintraub (1989) categorized instrumental social support (i.e., requesting help from others) as a problem-focused coping method. Whereas, emotional social support (i.e., seeking the help of others in order to discuss the problem and gain emotional support) is categorized as an emotion-focused coping method (Carver et al., 1989). Further, research defines avoidance coping as a third category, which includes seeking diversion, mentally disengaging from stress, and drinking (Endler & Parker, 1994; Metzger et al. 2017). Finally, voluntary student withdrawal from a post-secondary

institution can be conceptualized as a form of avoidance coping, as in some cases, it can reflect an individual's inability to cope effectively with collegiate stress (Ackermann & Morrow, 2007; Tinto, 1999).

College students' employment of problem-focused coping strategies (i.e., planning and task prioritization) have been found to have positive associations with adaptive behaviours, including lower stress levels (Misra & McKean, 2000; Sasaki & Yamasaki, 2005), higher academic motivation, better academic performance (Struthers et al., 2000), better health status (Sasaki & Yamasaki, 2007), optimism (Carver et al., 1989), and positive affect (Kim & Seidlitz, 2002). Whereas, research has shown different emotion-focused coping strategies to have positive and negative associations with adaptive behaviours. More specifically, some emotion-focused coping strategies (i.e., positive reframing and spirituality) are positively associated with optimism (Scheier et al., 1994), in addition to ameliorating negative affect and physical symptoms (Kim & Seidlitz, 2002); while other emotion-focused coping strategies (i.e., emotional expression/venting of emotion) are associated with neuroticism (Carver et al., 1989), and poorer health status (Sasaki & Yamasaki, 2007). Lastly, avoidance strategies are widely considered to be maladaptive methods of coping. For instance, avoidance coping strategies (i.e., denial and drinking) are associated with maladaptive behaviour, such as intoxication, poorer health (Pritchard et al., 2007), stress, negative affect, and physical symptoms (Kim & Seidlitz, 2002). Moreover, post-secondary students are more likely to employ avoidance coping strategies when they perceive being a student as stressful (Deasy, Coughlan, Pironom, Jourdan, & Mannix-McNamara, 2014).

In conclusion, college students' problem-focused coping strategies are widely associated with adaptive behaviours (Carver et al., 1989; Kim & Seidlitz, 2002; Misra & McKean, 2000;

Struthers et al., 2000; Sasaki & Yamasaki, 2007). Meanwhile, emotion-focused coping strategies have less consistent adaptive associations (Carver et al., 1989; Kim & Seidlitz, 2002; Sasaki & Yamasaki, 2007; Scheier et al., 1994), and avoidance coping is consistently associated with maladaptive behaviours (Kim & Seidlitz, 2002; Pritchard et al., 2007). In conclusion, these findings linking problem-focused coping with positive psychological and physical adjustment in college hold promise for potential interventions (Aspinwall & Shelley, 1992).

Sense of belonging. Sense of belonging is generally described as a student's subjective sense of affiliation and identification with their college community (Hoffman et al., 2002). A student's integration within their college's social and academic systems is thought to reflect their judgment of fit within the college environment (Hoffman et al., 2002), which explains why sense of belonging has recently emerged as a central construct to help understand the social and academic outcomes of college students (Won, Wolters, & Mueller, 2018).

Moreover, sense of belonging is conceptualized as a component of interpersonal connectedness most related to social support and most dissimilar to feelings of loneliness (Hagerty, Williams, Coyne, & Early, 1996). More specifically, loneliness is believed to be a natural consequence of failing to connect with others (Hagerty & Patusky, 1995). In contrast, the perception of being supported is thought to stem from the belief that one is well-integrated within a social network with adequate resources (Hoffman et al., 2002). The importance of social support within the college community is evidenced by a lack of peer support predicting poor academic achievement and adjustment in college (Dennis, Phinney, & Chuateco, 2005). Additionally, college students' quality friendships have been found to have inverse relationships with externalizing and internalizing behaviours (Pittman & Richmond, 2008).

It has been concluded that peer relationships contribute to students' overall sense of belonging (Meeuwisse, Severiens, & Born, 2010). Similar to peer support, faculty support is positively associated with college students' intentions to complete their college degree, suggesting that students who report receiving more support from faculty members may be more likely to persist in college (Morrow & Ackermann, 2012). In addition to positive faculty and peer relationships, encouragement of diversity and differences are thought to foster a caring, supportive, and welcoming college environment critical to nurturing college students' sense of belonging (O'Keeffe, 2013).

Sense of belonging, in general, is positively associated with social acceptance (Freeman et al., 2007), psychological adjustment (i.e., self-worth, internalizing, and externalizing behaviours), academic competence (Pittman & Richmond, 2007; 2008), academic achievement (Pittman & Richmond, 2007), and academic persistence/student retention (Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Tinto, 1999). Likewise, sense of belonging is found to have inverse relationships with both loneliness and depression in college students (Mounts, 2004). Consequently, if a student fails to achieve a strong sense of belonging, it may lead to negative consequences in terms of their college experiences and outcomes (Hausmann et al., 2007). Fortunately, college students' sense of belonging can be cultivated through membership to a smaller community within the broader campus community. More specifically, Hoffman and colleagues (2002) found that college students reported a significantly greater sense of belonging to their post-secondary institution after participating in a six-week learning seminar with peers studying similar academic courses and program majors. More specifically, learning community students reported higher levels of perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and less feelings of isolation

in comparison to their non-learning seminar counterparts (Hoffman et al., 2002). The authors concluded that learning communities facilitate both the academic and social development of college students by permitting more significant peer interaction centered around common academic challenges and stressors (Hoffman et al., 2002). Furthermore, the authors (Hoffman et al., 2002) concluded that sharing similar academic challenges facilitated supportive peer interactions within the learning community, as it provided inherent reciprocal opportunities for students to both be supported by and to support their peers.

The bulk of studies investigating college students' sense of belonging has focused on students who may be at risk for experiencing less sense of belonging to a post-secondary school community, including students of racial minorities, students with low socioeconomic status backgrounds, and female students in science, technology, engineering, or mathematics fields (Won et al., 2018). Research has yet to investigate sense of belonging among college students with ADHD.

Overall, previous research has found college students' sense of belonging to their post-secondary institution to have many positive associations with their social and academic adjustment in college, including social acceptance (Freeman et al., 2007), academic achievement (Pittman & Richmond, 2007), and academic persistence/student retention (Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Tinto, 1999). Additionally, previous research (Hoffman et al., 2002) has found membership to a smaller community within the broader campus community to strengthen college students' overall sense of belonging. In conclusion, positive associations between sense of belonging and overall academic persistence/student retention highlight the importance of cultivating college students' sense of

belonging to their school community, which in turn calls for post-secondary institutions to develop and implement sense of belonging intervention initiatives for students.

Relationships between coping methods and sense of belonging. Previous research (Ackermann & Morrow, 2007) has found relationships between college students' coping methods and sense of belonging to their post-secondary institution. More specifically, problem-focused coping strategies (i.e., planning/self-management and seeking support from institutional resources) were found to be positively associated with sense of belonging (i.e., perceived faculty support, classroom comfort, and perceived peer support; Ackermann & Morrow, 2007). Moreover, these problem-focused coping strategies were found to have an inverse relationship with feelings of isolation (Ackermann & Morrow, 2007). In other words, students who endorsed implementing planning/self-management strategies and seeking support from institutional resources to cope in college also reported a greater sense of perceived faculty support, classroom comfort, and perceived peer support, in addition to feeling less isolated (Ackermann & Morrow, 2007). To date, no research has investigated the relationships between forms of problem-focused coping and components sense of belonging among college students with ADHD.

ADHD in College/University Students

Demographics and Outcomes

Not only are individuals with ADHD less likely to attend college in comparison to their non-ADHD peers, they are also less likely to graduate (Barkley et al., 2008; Kuriyan et al., 2013). The percentage of college students with ADHD is thought to vary between post-secondary institutions (between two to eight percent); however, this prevalence rate is based on self-reported symptomology without diagnostic confirmation (DuPaul et al., 2009).

Challenges and Stressors

Given that college students with ADHD have completed high school and been admitted to college, but they are thought to represent a higher functioning subset of the overall ADHD population (Green & Rabiner, 2012). However, research suggests that college students with ADHD continue to struggle with symptom manifestations, including poor planning/disorganization, distractibility, difficulties focusing and sustaining attention (Weyandt & DuPaul, 2006), procrastination (Kaminski et al., 2006), and poor time management skills (Reaser, Prevatt, Petscher, & Proctor, 2007). Further research suggests that having ADHD in college is also associated with poor study skills, poor academic adjustment (Norvilitis, Sun & Zhang, 2010; Norwalk, Norvilitis, & MacLean, 2008), and ineffective or inefficient use of academic coping strategies (DuPaul et al., 2009; Kaminski et al., 2006). Moreover, ADHD symptoms may be exacerbated as the college environment demands superior executive functioning skills (i.e., organization and time management) and may pose new challenges and stressors, even for students who managed well in high school (Weyandt & DuPaul, 2006; Wolf, 2001). Furthermore, the attention-related demands of an academic environment (i.e., lengthy lectures and readings) may cause additional difficulties for adults with ADHD (i.e., focusing and sustaining attention; Barkley, Murphy, & Kwasnik, 1996; Biederman et al., 1993).

In terms of academic functioning, college students with ADHD have been reported to attain lower grade point averages (GPAs), withdraw from more courses, and take longer to complete their degrees in comparison to their non-ADHD peers (Barkley et al., 2008).

Academic impairment in college students with ADHD is also evidenced by higher rates of academic probation (DuPaul et al., 2009). Additionally, individuals with ADHD are estimated to

account for a staggering 25 percent of college students receiving disability services in college (DuPaul et al., 2009; Wolf, 2001).

In terms of social-emotional functioning, college students with ADHD have been found to have low self-esteem, poor interpersonal skills (Shaw-Zirt, Popali-Lehane, Chaplin, & Bergman, 2005), romantic relationship problems (Overbey, Snell, & Callis, 2011), poor social adjustment, and low self-efficacy (Norvilitis et al., 2010). College students with ADHD have also been found to have a higher overall rate of comorbidity in comparison to their non-ADHD peers, which was in large part due to increased prevalence of anxiety and depressive disorders (Anastopoulos et al., 2018). Additionally, higher levels (i.e., number and frequency of symptoms) of ADHD are associated with higher levels of depression (Norvilitis et al., 2010). Based on these social-emotional and psychological challenges college students with ADHD often experience, it is not surprising that they also report lower levels of quality of life in comparison to their non-ADHD peers (Grewald-Mayes, 2001).

In conclusion, college poses unique challenges for students with ADHD (Barkley et al., 1996; Biederman et al., 1993; Weyandt & DuPaul, 2006; Wolf, 2001). Moreover, ADHD in college is associated with poor academic (Barkley et al., 2008; DuPaul et al., 2009; Wolf, 2001), social-emotional (Norvilitis et al., 2010; Overbey et al., 2011; Shaw-Zirt et al., 2005), and psychological functioning (Anastopoulos et al., 2018; Grewald-Mayes, 2001; Norvilitis et al., 2010).

Coping Methods

There is currently a dearth in research examining coping methods among college students with ADHD. However, limited research suggests that academically high-achieving ADHD college students may use more effective compensatory coping strategies than their academically

lower-achieving ADHD peers (Kaminski et al., 2006). More specifically, Kaminski and colleagues (2006) found that better time management skills and freedom from financial concerns (i.e., not having to work while in college) were associated with academic success. Furthermore, in general, college students with ADHD reported working harder and longer than their peers (78 percent), using social support (i.e., parents, partners, friends, roommates, and professors; 52 percent), using time management and organizational skills (40 percent), spirituality/religion (26 percent), and self-awareness/therapy (21 percent; Kaminski et al., 2006). Although a significant portion (40 percent) of students with ADHD reported employing time management and organizational skills, a significant percentage (12 percent) reported an inability to use these skills consistently (Kaminski et al., 2006). Seeing as social support included both instrumental support (i.e., reminders and taking exams in private) and emotional support (i.e., listening and encouragement), coping strategies in the Kaminski and colleagues' (2006) study were not conceptualized as problem-focused or emotion-focused coping. This lack of differentiation between problem-focused and emotion-focused coping could be problematic given that college students' problem-focused coping strategies (i.e., planning) are widely associated with adaptive behaviours (Carver et al., 1989; Kim & Seidnitz, 2002; Misra & McKean, 2000; Struthers et al., 2000; Sasaki & Yamasaki, 2007). Meanwhile, some emotion-focused coping strategies (i.e., emotional expression/venting of emotion) are negatively associated with adaptive behaviours (Carver et al., 1989; Sasaki & Yamasaki, 2007).

Moreover, an in-depth qualitative analysis conducted by Meaux, Green, and Broussard (2009) investigated helpful and hindering coping strategies for college students with ADHD and found three global themes: (1) gaining insight about ADHD; (2) managing life; and (3) utilizing sources of support. As part of gaining insight about their ADHD diagnosis, participants

described learning from experience, seeking information, acknowledging, and opening up as helpful; whereas, keeping their ADHD diagnosis under wraps was described as hindering (Meaux et al., 2009). In terms of managing life, participants described being held accountable, learning from consequences, taking central nervous system (CNS) stimulants, setting alarms and reminders, removing distractions, and scheduling as being helpful; while, persistent ADHD symptoms, and addictive behaviours were described as hindering (Meaux et al., 2009). Lastly, utilizing sources of support, parents, friends, professors/tutors, academic support, and disability services were described as helpful; while, lack of ADHD knowledge and missed opportunities were described as hindering (Meaux et al., 2009). Although Meaux and colleagues (2009) categorized college students with ADHD's coping strategies, they did not conceptualize strategies as problem-focused, emotion-focused, or avoidance coping.

In conclusion, limited research has investigated coping methods among college students with ADHD. Overall, preliminary research investigating coping among college students with ADHD has found some general trends, such as working harder and longer than their non-ADHD peers (Kaminski et al., 2006). However, superior time management skills and financial freedom may distinguish between academically higher- and lower-achieving college students with ADHD (Kaminski et al., 2006). It is important to note that existent literature investigating coping strategies among college students with ADHD (Kaminski et al., 2006; Meaux et al., 2009) has not conceptualized strategies as problem-focused, emotion-focused, or avoidance coping.

Treatment

Medication. The treatment goals for ADHD medications are to stabilize attention, impulse control, and hyperactivity to normative levels (Dodson, 2005). CNS stimulants are the most commonly prescribed ADHD medication (National Institute for Mental Health [NIMH],

2016). However, many adults with ADHD cannot or opt not to take CNS medications, and for those individuals who do, many continue to experience significant residual core symptoms of ADHD. Even individuals who are considered to be CNS responders by the standards of most medication trials may continue to experience significant and impairing symptoms (Steele, Jensen, & Quinn, 2006). Thus, there is an increasing demand for psychosocial treatment approaches that target ADHD-related behavioural deficits (Knouse & Safren, 2010).

Psychosocial interventions. The main objective behind cognitive-behavioural therapy (CBT) for adults with ADHD is to teach effective management of chronic neurobiologically-based symptoms through the consistent use of self-management strategies (Knouse & Fleming, 2016). CBT interventions for adults with ADHD that consistently focus on organization, planning, and distractibility-reduction skills tend to demonstrate large effect sizes (Knouse & Safren, 2010). Recently, three studies investigating adapted adult ADHD CBT interventions for college students with ADHD have emerged with promising results (Knouse & Fleming, 2016).

The first study by LaCount and colleagues (2015) adapted a ten-week CBT intervention based on the Safren, Perlman, Sprich, and Otto (2005) treatment manual for adults with ADHD. The CBT intervention was delivered in both group and individual formats, which focused on psychoeducation, behavioural, and cognitive skills (LaCount et al., 2015). This adapted CBT intervention resulted in significant improvements from baseline to post-treatment in inattentive symptoms associated with a large effect size (LaCount et al., 2015). Moreover, LaCount and colleagues (2015) found significant reductions in functional impairments both in school and at work, both of which were associated with medium effect sizes. Additionally, the group component of the intervention was thought to provide peer support, encouragement,

reinforcement, and model positive behaviour change for college students with ADHD (LaCount et al., 2015).

The second study by LaCount and colleagues (2018) used a non-randomized control study to investigate a condensed three-week group CBT intervention adapted from the Solanto, Marks, Mitchell, and Wasserstein (2011) adult ADHD treatment manual. More specifically, LaCount and colleagues' (2018) intervention targeted organization, time management, and planning skills (OTMP), for college students who self-reported elevated levels of inattention or hyperactivity/impulsivity with accompanied academic impairment. LaCount and colleagues (2018) found significant improvements in both inattentive and hyperactive/impulsive symptoms, in addition to improved OTMP skills utilization and reduced functional impairment in school, all of which were associated with medium effect sizes.

The third study by Anastopoulos and King (2015) adapted both the Safren and colleagues (2005) and the Solanto and colleagues (2011) adult ADHD treatment manuals into an eight-week CBT intervention, which was delivered as weekly group sessions and individual (one-to-one) mentoring formats with additional booster sessions offered the following semester. The sessions focused on increasing psychoeducation, student utilization of on-campus resources, behavioural, and cognitive skills. Anastopoulos and King (2015) found significant improvements in ADHD knowledge, behavioural strategies (i.e., using a planning calendar and setting long-term goals), and adaptive thinking, all of which were associated with large to very large effect sizes. Further, medium to large effects were found to be associated with significant improvements in self-reported inattentive symptoms and executive functioning skills (i.e., metacognition, behavioural, and global executive functioning; Anastopoulos & King, 2015). Additionally, a threefold

increase (19% to 57%) was found in the number of participants who reported accessing campus resources (i.e., disability services; Anastopoulos & King, 2015).

Although previous CBT interventions adapted for college students with ADHD or ADHD symptoms varied in duration (i.e., from three to ten sessions), format (i.e., group sessions or group plus individual sessions; with or without follow-up sessions), research design (i.e., open clinical trial and non-randomized control trial), and content (i.e., treatment manual), all three studies found similar outcomes from pre- to post-treatment (Anastopoulos & King, 2015; LaCount et al., 2015; LaCount et al., 2018). More specifically, the studies found improvements in ADHD symptom management, especially regarding inattentive symptoms, as well as improved functioning, especially within the college environment. Additionally, two studies (Anastopoulos & King, 2015; LaCount et al., 2018) found improvements in problem-focused coping (i.e., OTMP skills). Moreover, Anastopoulos and King (2015) found significant improvement in seeking support from disability services) among college students with ADHD. Although these findings appear promising, they are limited to only a handful of studies. Hence, additional research is necessary to determine the efficacy of CBT interventions for college students with ADHD (Knouse & Fleming, 2016).

Current Psychosocial Intervention

The psychosocial intervention developed for the current study was primarily based on *Mastering Your Adult ADHD: A Cognitive-Behavioural Treatment Program Therapist's Guide* (Safren et al., 2005). This CBT treatment manual was adapted into what was called the ADHD Skills Workshop, which consisted of PowerPoint presentations that were facilitated for six one-hour weekly group sessions. The six sessions were titled: (1) Building Academic Connections; (2) Planning, Time Management, and Organization; (3) Task Prioritization and Procrastination;

(4) Managing Distractibility; (5) Adaptive Thinking; and (6) Rehearsal and Relapse Prevention.

The Building Academic Connections content from the first session was added to adapt the Safren and colleagues' (2005) adult ADHD treatment manual to meet the unique needs of undergraduate university students. Details for each session are provided in Table 1. Each session began with a review of the previous session's content, which was followed by a facilitated group discussion about successes and challenges participants experienced implementing and integrating strategies from the previous week's session. Each session ended by providing homework handouts for participants to practice implementing and integrating strategies covered that week. The workshop sessions were facilitated by one first-year master's student and one second-year master's student who were both registered in a related graduate psychology program.

Table 1. *Program Information*

Week	Title	Content
One	Building Academic Connections	Introduction, program objectives, personal objectives, pros and cons of changing, cognitive-behavioural model of ADHD, adult ADHD, campus resources, building academic connections with classmates and professors.
Two	Planning, Time Management, and Organization	Goal-setting, task lists, schedules, reminders, keeping track of essential items, and utilizing a digital filing system for course-related materials.
Three	Task Prioritization and Procrastination	Prioritizing multiple tasks, managing overwhelming tasks, weighing the pros and cons of procrastination, self-motivation, and problem-solving.
Four	Managing Distractibility	Reducing distractions, gauging attention span, chunking tasks, distractibility delay, modifying study environments, and productive study habits.
Five	Adaptive Thinking	Automatic (negative) thoughts, the relationships between thoughts, feelings, and behaviours, thinking errors, rational responses, and thought records.
Six	Rehearsal and Relapse Prevention	Review of all program content, dealing with setbacks, maintaining strategies and skills to achieve personal goals.

Pilot Psychosocial Intervention

A piloted version of the ADHD Skills Workshop was trialed prior to the current study. Five undergraduate students from a large Western Canadian university participated in the pilot program; however, attendance throughout the six-week workshop was inconsistent. The piloted ADHD Skills Workshop included six sessions that differed slightly in content and sequence from the current version of the program. The session durations were originally 50-minutes as opposed to a full hour. The introductory session was the same as the current session, except it did not include information about building academic connections with classmates, professors, or on-campus resources. Information regarding academic connections was added to provide participants with an additional problem-focused coping strategy (i.e., seeking support from institutional resources), as well as to encourage participants to build connections with peers and faculty members in an attempt to foster their sense of belonging. Initially, sessions two (Planning, Time Management, and Organization) and three (Task Prioritization and Procrastination) of the current program were combined, forming session two of the pilot program; however, it was determined to be too much content to cover within a single session. Session five was originally a mindfulness session facilitated by a registered Social Worker employed at the university. The mindfulness content was additional to the Safren and colleagues' (2005) adult ADHD CBT treatment manual but was ultimately removed from the workshop to create space to split session two into two separate sessions (i.e., sessions two and three). Furthermore, it was understood that free weekly on-campus mindfulness sessions were available to undergraduate students, and this information was subsequently shared with the current study's participants in lieu of offering a mindfulness session in the current program.

Current Study

One of the two primary purposes of the current study was to investigate the preliminary effects of a condensed six-week group psychosocial intervention on problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) among undergraduates with ADHD symptoms. Currently, a dearth in research investigating coping methods among college students with ADHD exists; however, research supports that non-ADHD college students' implementation of problem-focused coping strategies is associated with adaptive outcomes (Carver et al., 1989; Kim & Seidlitz, 2002; Misra & McKean, 2000; Sasaki & Yamasaki, 2007; Struthers et al., 2000). Only a few studies have recently investigated adapted adult ADHD CBT programs for college students with ADHD, finding some impressive post-intervention outcomes (i.e., reduced symptoms and improved academic functioning). Moreover, only two of which studies (Anastopoulos & King, 2015; LaCount et al., 2018) have investigated planning/self-management problem-focused coping behavioural strategies in particular (i.e., using a planning calendar and setting long-term goals) with significant results from pre- to post-intervention. Similarly, the seeking support from institutional resources form of problem-focused coping has only been investigated by Anastopoulos and King (2015) and was found to increase after psychoeducation about on-campus resources (i.e., disability services). Seeing as improved problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) among college students with ADHD is limited to only one or two intervention studies (Anastopoulos & King, 2015; LaCount et al., 2018), necessitates further replication before these findings can be considered generalizable. Furthermore, additional research has been called for to determine the general efficacy of CBT interventions among college students with ADHD (Knouse & Fleming, 2016).

The secondary purpose of the current study is to investigate the preliminary effects of a condensed six-week group psychosocial intervention on sense of belonging to a post-secondary institution (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduate students with ADHD symptoms. Similar to problem-focused coping, sense of belonging has been identified as an important psychosocial construct associated with adjustment in college (Freeman et al., 2007; Hausmann et al., 2007; Morrow & Ackermann, 2012; O’Keeffe, 2013; Pittman & Richmond, 2007; 2008; Tinto, 1999; Won et al., 2018). Although there exists a fair amount of research investigating minority and marginalized college students’ sense of belonging, no research to date has investigated sense of belonging among college students with ADHD. Furthermore, the precedent set by Hoffman and colleagues (2002) that sense of belonging to a post-secondary institution can be fostered by student membership to a smaller community (i.e., a six-week learning seminar) inspired the current study to explore whether a six-week group psychosocial intervention could foster sense of belonging among undergraduates with ADHD symptoms.

Additionally, problem-focused coping strategies (i.e., planning/self-management and seeking support from institutional resources) have previously been found to have positive relationships with sense of belonging (i.e., perceived faculty support, classroom comfort, and perceived peer support) and inverse relationships with feelings of isolation among the general college population (Ackermann & Morrow, 2007). Thus, an ancillary purpose of the current study was to investigate whether relationships between problem-focused coping and sense of belonging observed in the general college population extend to undergraduates with ADHD symptoms.

Research Questions and Hypotheses

The current study set out to examine the following four research questions.

Research question one. *Does participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms significantly increase planning/self-management (problem-focused coping strategies) among undergraduates with ADHD symptoms?*

Previous studies investigating adapted adult ADHD CBT interventions for college students with ADHD have found improved functioning within the college environment (LaCount et al., 2015; LaCount et al., 2018). More specifically, the Anastopoulos and King's (2015) study and LaCount and colleagues' (2018) study both found significant improvements post-intervention in planning/self-management behavioural strategies (i.e., using a planning calendar and setting long-term goals). As described in the current psychosocial intervention section above, the Safren and colleagues (2005) adult ADHD treatment manual includes problem-focused coping strategies, such as planning, time management, and organization skills. Thus, considering planning/self-management strategies were explicitly targeted in the current study's psychosocial intervention and based on similar intervention studies' findings (Anastopoulos & King, 2015; LaCount et al., 2015; LaCount et al., 2018), it is hypothesized that undergraduates with ADHD symptoms will report improved planning/self-management (problem-focused coping) from pre- to post-intervention.

Research question two. *Does participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms significantly increase seeking support from institutional resources (problem-focused coping) among undergraduates with ADHD symptoms?*

The Safren and colleagues' (2005) adult ADHD CBT treatment manual was adapted to suit university students by adding information about on-campus resources (i.e., disabilities services) as well as providing tips on how to build academic connections with both classmates and professors. One previous study (Anastopoulos & King, 2015), which incorporated the Safren and colleagues' (2005) treatment manual in addition to providing information about on-campus resources, found a threefold increase in the number of college students with ADHD who reported accessing campus resources (i.e., disability services). Based on the findings of Anastopoulos and King (2015) and given that the current study's intervention was adapted from the same adult ADHD treatment manual (Safren et al., 2005) and similarly provided information about on-campus resources, it is predicted that undergraduates with ADHD symptoms will report seeking significantly more support from institutional resources (problem-focused coping) post-intervention.

Research question three. *Does participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms significantly improve components of sense of belonging to a post-secondary institution (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduates with ADHD symptoms?*

Hoffman and colleagues (2002) concluded that college students' sense of belonging to their post-secondary institution could be cultivated through membership to a smaller community within the broader college community, which was evidenced by participation in a six-week learning seminar with other students studying similar courses and program majors. More specifically, learning community students reported significantly greater perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support,

and reduced feelings of isolation in comparison to their non-learning community peers (Hoffman et al., 2002). Considering the current study's group psychosocial intervention was the same duration (i.e., six weeks) and similarly offered a small community within the broader campus community centered around a shared challenge or issue (i.e., ADHD symptomology), it is hypothesized that participants will report significantly improved perceived faculty support, perceived empathetic faculty understanding, classroom comfort, and perceived peer support while reporting significantly reduced feelings of isolation from pre- to post-intervention.

Research question four. *Do relationships between components of sense of belonging and problem-focused coping strategies observed in the general college population extend to undergraduates with ADHD symptoms?*

Previous research (Ackermann & Morrow, 2007) has found relationships between the general college population's problem-focused coping strategies and sense of belonging. More specifically, problem-focused coping strategies (i.e., planning/self-management and seeking support from institutional resources) were positively associated with components of sense of belonging (i.e., perceived faculty support, perceived peer support, and classroom comfort; Ackermann & Morrow, 2007). Moreover, both forms of problem-focused coping were found to have inverse relationships with feelings of isolation (Ackermann & Morrow, 2007). In other words, students who endorsed implementing planning/self-management strategies and seeking support from institutional resources to cope in college also reported greater perceived faculty support, classroom comfort, and perceived peer support, in addition to feeling less isolated (Ackermann & Morrow, 2007). It is hypothesized that problem-focused coping within the college environment and one's sense of belonging to a post-secondary institution are related psychological constructs. Thus, it is expected that there will be similar associations between

problem-focused coping strategies and components of sense of belonging among undergraduates with ADHD symptoms, as Ackermann and Morrow (2007) previously found among the general college population.

Chapter 3: Methodology

Participants

A total of 13 undergraduate students from a large Western Canadian university participated in the research component of the ADHD Skills Workshop. Inclusion criteria required participants to have either a previous formal ADHD diagnosis (84.62 percent of the total sample) or self-reported clinically significant ($\geq 97^{\text{th}}$ percentile) ADHD symptoms (15.38 percent of the total sample). The mean age of a formal ADHD diagnosis was 21.73 years ($SD = 10.36$). Of the 11 participants who had a formal ADHD diagnosis, three specified an ADHD-I subtype (23.08 percent), three specified an ADHD-C subtype (23.08 percent), one specified an ADHD-HI subtype (7.69 percent), and four reported that they were unsure of their ADHD subtype (30.77 percent). The remaining two participants (15.38 percent) self-reported clinically significant ($\geq 97^{\text{th}}$ percentile) inattentive symptoms, bringing the overall inattentive total portion of the sample to 38.46 percent. The majority of participants (76.92 percent of the total sample) reported taking prescribed medication to treat their ADHD. Another 61.54 percent of the sample reported being registered with the university to receive academic supports and accommodations. Of the total 13 participants, eight reported comorbid mental disorders (61.54 percent), made up by 23.08 percent reporting anxiety and depressive disorders, 15.38 percent reporting depressive disorder, 7.69 percent reporting anxiety disorder, 7.69 percent reporting gender dysphoria, and 7.69 percent reporting combined Asperger's syndrome, anxiety, and depressive disorders. The sample was primarily female (76.92 percent). Most participants identified as White/Caucasian

(76.92 percent), while other participants identified as Hispanic (15.38 percent), and Mixed Race (7.69 percent). The mean age of the sample was 28.31 years ($SD = 8.77$), while their mean year of study was 2.92 ($SD = 1.55$). The majority of participants (92.31 percent of the total sample) were registered as full-time students in three or more courses. Demographic information is presented below in Table 2.

Table 2. *Demographic Information*

Variable	Category	<i>n</i>	<i>%</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Age		–	–	28.31	8.77	18.00	42.00
Age of Formal Diagnosis		–	–	21.73	10.36	7.00	42.00
Gender	Male	3	23.08	–	–	–	–
	Female	10	76.92	–	–	–	–
Ethnicity	Caucasian	10	76.92	–	–	–	–
	Hispanic	2	15.38	–	–	–	–
	Mixed/Multiple	1	7.69	–	–	–	–
Formal Diagnosis		11	84.62	–	–	–	–
Self-Reported ADHD		2	15.38	–	–	–	–
Formal Subtype	Inattentive	3	23.08	–	–	–	–
	Hyperactive-Impulsive	1	7.69	–	–	–	–
	Combined	3	23.08	–	–	–	–
	Unknown	4	30.77	–	–	–	–
Self-Reported Subtype	Inattentive	2	15.38	–	–	–	–
ADHD Medication	Medicated	10	76.92	–	–	–	–
	Unmedicated	3	23.08	–	–	–	–
Academic Supports	Registered	8	61.54	–	–	–	–
	Unregistered	5	38.46	–	–	–	–
Comorbidities	Anxiety	1	7.69	–	–	–	–
	Depression	2	15.38	–	–	–	–
	Anxiety and Depression	3	23.08	–	–	–	–
	Gender Dysphoria	1	7.69	–	–	–	–
	Asperger’s, Anxiety & Depression	1	7.69	–	–	–	–
Year of Study		–	–	2.92	1.55	1.00	6.00
Course Load	Full-time	12	92.31	–	–	–	–
	Part-time	1	7.69	–	–	–	–

Measures

The measures employed in this study were related to demographics, self-reported ADHD symptoms, problem-focused coping, and perceived sense of belonging to the college/university environment. The following section provides further explanation of each measure.

Demographic Questionnaire. Each participant was asked to complete a demographic questionnaire (See Appendix A), which included questions about age, gender, ethnicity, formal ADHD diagnosis, subtype, age of diagnosis, prescribed ADHD medication use, registration with university academic supports and accommodations, comorbid mental health diagnoses, year of study, and course load.

Barkley Adult ADHD Rating Scale-Fourth Edition (BAARS-IV; Barkley, 2011). The Barkley Adult ADHD Rating Scale (BAARS-IV; See Appendix B) is based on Barkley's (2011) research into the reliability, validity, and utility of using rating scales for the behavioural assessment of ADHD symptoms in clinically referred or high-risk adults. The BAARS-IV is an empirical scale that measures ADHD symptomology using the diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; APA, 2000).

The BAARS-IV contains a self-report measure of Current Symptoms and Functioning, which consists of all 18 clinical symptoms described in the DSM-IV-TR, in addition to questions regarding estimated onset of symptoms and whether symptoms have resulted in impaired functioning in several life domains (i.e., home, education, work, and social; Barkley, 2011). Respondents rate each symptom on a four-point Likert scale ranging from one (never or rarely) to four (very often), indicate the age of onset, and respond yes or no to the functional impairment questions (Barkley, 2011). The Current Symptoms scale includes four subscales with a total of

27-items: (1) Inattention (nine items); (2) Hyperactivity (five items); (3) Impulsivity (four items); and (4) Sluggish Cognitive Tempo ([SCT]; nine items). SCT is believed to characterize a unique subset of adults diagnosed with ADHD-I who do not exhibit any hyperactive or impulsive symptoms (Barkley, 2011). Most research validating the BAARS-IV was conducted using an earlier version of the BAARS-IV, which did not include SCT symptoms (Barkley, 2011). Thus, only the Inattentive, Hyperactive, and Impulsive subscales were employed in this study, as they are considered reliable and valid symptom subscales reflecting the current ADHD diagnostic criteria.

The BAARS-IV Current Symptoms self-report form was normed using a representative sample of 1,249 adults from the United States (Barkley, 2011). Although the BAARS-IV uses ADHD symptomology from the since outdated DSM-IV-TR, it is still considered to have robust construct validity (Barkley, 2011), as ADHD symptomology has generally remained the same in the DSM-5 (Epstein & Loren, 2013). In further support of the construct validity of the BAARS-IV, self-reported current symptoms collected via a clinical interview have been found to highly and significantly correlate with self-report ratings on the scale (Barkley, 2011; Kooji et al., 2008). Furthermore, individuals with a prior ADHD diagnosis have been found to report significantly higher symptoms on the self-report scale than individuals with no prior diagnosis, indicating that in addition to construct validity, the BAARS-IV also demonstrates discriminant validity to discern between clinical and control groups (Williamson et al., 2014). Moreover, the BAARS-IV has been found to demonstrate high internal reliability in addition to high test-retest reliability over a two-week to three-week interval (Barkley, 2011; Sadeghi, Sadeghi-Bazargani, & Amiri, 2017). In summary, the BAARS-IV is considered to be a reliable and valid measure that is convenient to use and score both in clinical practice and research settings (Barkley, 2011).

The Current Symptoms and Functioning self-report form was used for this study, as the inclusion criterion was clinically significant self-reported ADHD symptoms. This criterion was set to include undergraduate students in the study who self-identified as struggling with attention-related strategies, as their symptoms may have gone undetected prior to university, potentially missing opportunities to be formally assessed and diagnosed with ADHD. The BAARS-IV was scored for all participants, including those with a formal ADHD diagnosis to confirm current symptomology. In order to be included in the research sample, participants were required to self-report clinically significant ($\geq 97^{\text{th}}$ percentile) ADHD symptoms in at least one behavioural domain (i.e., Inattention, Hyperactivity, or Impulsivity).

Coping with the College Environment Scale (CWCES; Ackermann & Morrow, 2007). The Coping with the College Environment Scale ([CWCES]; See Appendix C) is a self-report measure developed by Ackermann and Morrow (2007) to investigate students' coping methods within the college environment. The CWCES consists of 31-items classified into six subscales, which are catalogued into three central coping categories: (1) Problem-Focused; (2) Emotion-Focused; and (3) Avoidance (Ackermann & Morrow, 2007). These three coping categories combined account for a total of 57.12 percent of the variance among the 31-items (Ackermann & Morrow, 2007). However, the current study only investigated Problem-Focused Coping, which includes the following two subscales: (1) Planning/Self-Management; and (2) Seeking Support from Institutional Resources (Ackermann & Morrow, 2007). The first Problem-Focused Coping subscale, Planning/Self-Management, measures the degree to which students plan and manage their time (i.e., "*I try to do a better job managing my time.*" and "*I try to get more organized.*"; Ackermann & Morrow, 2007). The Planning and Self-Management subscale includes eight items ($\alpha = .82$) and accounts for 12.26 percent of the variance among the

31-items (Ackermann & Morrow, 2007). The second Problem-Focused Coping subscale, Seeking Support from Institutional Resources, measures the degree to which students seek support from institutional resources, such as faculty members or on-campus resources (i.e., “*I ask my professors for help.*” and “*I join a study group.*”; Ackermann & Morrow, 2007). The Seeking Support from Institutional Resources subscale includes seven items ($\alpha = .82$) and accounts for 11.33 percent of the variance among the 31-items (Ackermann & Morrow, 2007).

Overall, the CWCES has been found to demonstrate adequate psychometric properties, including internal reliability and convergent validity (Ackermann & Morrow, 2007).

Respondents rate items on a four-point Likert scale ranging from zero (never) to three (often). Thus, higher scores on the Planning/Self-Management and Seeking Support from Institutional Resources subscales on the CWCES are indicative of students more frequently employing these adaptive coping methods.

Sense of Belonging Scale (SOBS; Hoffman, Richmond, Morrow, & Salomone, 2002).

The Sense of Belonging Scale ([SOBS]; See Appendix D) is a self-report measure developed by Hoffman and colleagues (2002) to measure sense of belonging to a post-secondary institution. The SOBS consists of 26-items classified into five subscales: (1) Perceived Faculty Support; (2) Perceived Empathetic Faculty Understanding; (3) Classroom Comfort; (4) Perceived Peer Support; and (5) Feelings of Isolation (Hoffman et al., 2002). These five subscales combined account for a total of 63.3 percent of the variance among the 26-items (Hoffman et al., 2002).

The first subscale, Perceived Faculty Support, measures students’ perceptions of how supported and comfortable faculty members made them feel in response to their requests for help (i.e., “*I feel comfortable seeking help from a teacher before or after class.*” and “*I feel comfortable asking a teacher for help if I do not understand course-related material.*”). The

Perceived Faculty Support subscale includes six items ($\alpha = .87$) and accounts for 9.0 percent of the variance among the 26-items (Hoffman et al., 2002). The second subscale, Perceived Empathetic Faculty Understanding, measures students' perceptions of how empathetic faculty members were in response to their self-disclosures of personal or sensitive information (i.e., *"I feel that a faculty member would be sensitive to my difficulties if I shared them."* and *"I feel that a faculty member really tried to understand my problem when I talked about it."*). The Perceived Empathetic Faculty Understanding includes four items ($\alpha = .85$) and accounts for 4.2 percent of the variance among the 26-items (Hoffman et al., 2002). The third subscale, Classroom Comfort measures how comfortable students feel about participating in class (i.e., *"I feel comfortable contributing to class discussions."* and *"I feel comfortable asking a question in class."*). The Classroom Comfort includes four items ($\alpha = .90$) and accounts for 6.4 percent of the variance among the 26-items (Hoffman et al., 2002). The fourth subscale, Perceived Peer Support, measures students' perceptions of how supported they feel by their peers (i.e., *"I have met with classmates outside of class to study for an exam."* and *"If I miss a class, I know students who I could get the notes from."*). The Perceived Peer Support subscale includes nine items ($\alpha = .87$) and accounts for 38.8 percent of the variance among the 26-items (Hoffman et al., 2002). The fifth subscale, Feelings of Isolation, measures students' feelings of isolation within the college environment (*"I rarely talk to other students in my classes."* and *"I know very few people in my classes."*). The Feelings of Isolation subscale includes four items ($\alpha = .82$) and accounts for 4.9 percent of the variance among the 26-items (Hoffman et al., 2002).

Overall, the SOBS measures sense of belonging to a post-secondary institution as a multidimensional construct, which has been found to demonstrate adequate internal reliability (Hoffman et al., 2002; Tovar, Simon, & Lee, 2009) and convergent validity (Ackermann &

Morrow, 2007). The pre- and post-intervention Perceived Faculty Support, Perceived Empathetic Faculty Understanding, Classroom Comfort, and Perceived Peer Support subscales were scored using a Likert scale of one (completely *untrue*) to five (completely *true*), instead of one (completely *true*) to five (completely *untrue*) in order to simplify interpretation of the results. Thus, a higher score on these subscales indicates a greater sense of belonging to one's post-secondary institution. Given that feelings of isolation have an inverse relationship with sense of belonging, the negatively worded Feelings of Isolation items are reverse scored (Hoffman et al., 2002). Thus, a higher score on the Feelings of Isolation subscale is indicative of feeling less isolated within the college environment. For example, a rating of five (completely *untrue*) on the negatively worded Feelings of Isolation items (i.e., "*No one in my classes knows anything personal about me.*") is indicative of feeling less isolated than a rating of one (completely *true*).

Procedure

Recruitment. Participants were recruited using posters (See Appendix E) advertised across the main campus of the university. The posters directed interested students to email the researcher in order to register and receive more information regarding the ADHD Skills Workshop. Additionally, counsellors from the campus health centre as well as advisors for students with disabilities, were asked to provide information to students whom they felt could benefit from the psychosocial intervention via a recruitment letter (See Appendix F). Further, information was distributed via social media and a presentation at the beginning of a first-year undergraduate psychology lecture.

During the first session, participants were informed they were welcome to participate in the research component of the ADHD Skills Workshop. Consenting participants were asked to

sign an informed consent form (See Appendix G) before filling out the pre-intervention measures (i.e., Demographic Questionnaire, BAARS-IV, CWCES, and SOBS). Participants independently completed surveys in-person immediately prior to commencing the first intervention session (time one) and immediately after completing the sixth and final intervention session (time two). Only the CWCES and SOBS were completed as post-intervention measures.

Given that the minimum duration of an effective adapted adult ADHD psychosocial intervention has previously been found to be three sessions (LaCount et al., 2018), participants were required to attend a minimum of 50 percent (three or more) of the ADHD Skills Workshop sessions in order for their data to be included in the study. This attendance minimum criterion was also set in part to include as many participants in the research sample as possible. The PowerPoints were emailed after each session to all participants, including those who were absent.

Automatic meeting reminders were sent the morning of a workshop session. As an additional reminder, electronic versions of session handouts were strategically emailed to participants a few hours prior to the workshop's start time.

Chapter 4: Results

Prior to conducting analyses for the research questions, the assumptions of normally distributed difference scores for planning/self-management, seeking support from institutional resources, perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation were examined. No outliers greater than 1.5 box-lengths from the edge of the box in a boxplot were detected for any of the analyses, except for perceived peer support and feelings of isolation. More specifically, three outliers were detected using a boxplot analysis for perceived peer support; however, only one of the outliers

was determined to be an extreme outlier, as it was more than three box-lengths from the edge of the box and resulted in its removal from the data set. Thus, the sample size for the perceived peer support analysis was reduced from 13 participants to 12. Similarly, three outliers were detected for feelings of isolation. Again, only one of the outliers was determined to be an extreme outlier, as it was more than three box-lengths from the edge of the box and resulted in its removal from the data set. Thus, reducing the sample size for the feelings of isolation analysis from 13 to 12.

Research Question One

The first research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms would significantly improve planning/self-management problem-focused coping strategies among undergraduates with ADHD symptoms. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' ratings from pre- to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = 0.21$). No difference was found in participants' planning and self-management from pre-intervention ($M = 27.23$, $SD = 2.24$) to post-intervention ($M = 28.00$, $SD = 2.80$), $t(12) = 1.59$, $p = .14$, $d = .44$.

Table 3. *Planning/Self-Management Problem Focused Coping Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 13$)		Post-Intervention ($n = 13$)		t	Cohen's d
	M	SD	M	SD		
Planning / Self-Management	27.23	2.24	28.00	2.80	1.59	.44

Research Question Two

The second research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms would

significantly increase the amount of institutional resources undergraduates with ADHD symptoms reportedly sought. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' use of institutional resources from pre-intervention to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = 0.96$). No difference was found in participants' seeking support from institution resources from pre-intervention ($M = 17.62, SD = 2.69$) to post-intervention ($M = 17.62, SD = 3.80$), $t(12) = .00, p = 1.00, d = .00$.

Table 4. *Seeking Support from Institutional Resources Problem-Focused Coping Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 13$)		Post-Intervention ($n = 13$)		t	Cohen's d
	M	SD	M	SD		
Seeking Support from Institutional Resources	17.62	2.69	17.62	3.80	.00	.00

Research Question Three

The third research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms improved components of sense of belonging to a post-secondary institution (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduates with ADHD symptoms.

Perceived faculty support. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' perceived faculty support from pre-intervention to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = .94$). No difference was found in participants' perceived faculty

support from pre-intervention ($M = 18.23$, $SD = 5.56$) to post-intervention ($M = 19.23$, $SD = 4.64$), $t(12) = 1.01$, $p = .33$, $d = .28$.

Table 5. *Perceived Faculty Support Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 13$)		Post-Intervention ($n = 13$)		t	Cohen's d
	M	SD	M	SD		
Perceived Faculty Support	18.23	5.56	19.23	4.64	1.01	.28

Perceived empathetic faculty understanding. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' perceived empathetic faculty understanding from pre-intervention to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = .43$). No difference was found in participants' perceived empathetic faculty understanding from pre-intervention ($M = 12.08$, $SD = 3.86$) to post-intervention ($M = 13.69$, $SD = 2.96$), $t(12) = 1.63$, $p = .13$, $d = .45$.

Table 6. *Perceived Empathetic Faculty Understanding Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 13$)		Post-Intervention ($n = 13$)		t	Cohen's d
	M	SD	M	SD		
Perceived Empathetic Faculty Understanding	12.08	3.86	13.69	2.96	1.63	.45

Classroom comfort. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' classroom comfort from pre-intervention to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = .27$). No difference was found in participants' classroom comfort from pre-

intervention ($M = 13.62, SD = 3.89$) to post-intervention ($M = 13.54, SD = 3.89$), $t(12) = -.11, p = .92, d = -.03$.

Table 7. *Classroom Comfort Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 13$)		Post-Intervention ($n = 13$)		t	Cohen's d
	M	SD	M	SD		
Classroom Comfort	13.62	3.89	13.54	3.89	-.11	-.03

Perceived peer support. A paired samples t-test was used to determine whether there was a statistically significant difference between participants' perceived peer support from pre-intervention to post-intervention. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test ($p = .22$). A significant increase was found in participants' perceived peer support from pre-intervention ($M = 29.42, SD = 6.02$) to post-intervention ($M = 31.33, SD = 5.94$), $t(11) = 2.28, p < .05$, with a medium effect size ($d = .66$).

Table 8. *Perceived Peer Support Pre- and Post-Intervention*

Variable	Pre-Intervention ($n = 12$)		Post-Intervention ($n = 12$)		t	Cohen's d
	M	SD	M	SD		
Perceived Peer Support	29.42	6.02	31.33	5.94	2.28*	.66

* indicates $p < .05$

Feelings of isolation. A paired samples t-test could not be used to determine whether there was a statistically significant difference between participants' feelings of isolation because the assumption of normality as assessed by Shapiro-Wilk's test ($p = .01$) was violated. The Wilcoxon signed-rank test is considered the nonparametric equivalent of the paired samples t-test. Instead of determining whether there is a mean difference between paired observations as does the paired samples t-test, the non-parametric Wilcoxon signed-rank test determines whether

there is a median difference. Thus, the Wilcoxon signed-rank test was conducted to determine the effect of a psychosocial intervention on undergraduates with ADHD symptom's feelings of isolation at university.

Self-reported feelings of isolation were measured pre- and post-intervention. The difference scores were approximately symmetrically distributed, as assessed by a histogram with a superimposed normal curve. Of the 12 participants in the analysis, the ten participants reported improved feelings of isolation post-intervention, two participants' self-reported feelings of isolation remained unchanged post-intervention, and no participants reported worsened feelings of isolation post-intervention. As the feelings of isolation subscale was reverse scored, a larger score on the subtest indicates reduced feelings of isolation (i.e., feeling isolated less often). A statistically significant median increase was found in participants' feelings of isolation ($Mdn = 3.00$) from pre-intervention ($Mdn = 9.00$) to post-intervention ($Mdn = 12.00$), $z = 2.87$, $p < .01$, with a medium effect size ($r = .59$).

Table 9. *Feelings of Isolation Pre- and Post- Intervention*

Variable	Pre-Intervention	Post-Intervention	<i>z</i>	<i>r</i>
	(<i>n</i> = 12)	(<i>n</i> = 12)		
Feelings of Isolation	<i>Mdn</i> 9.00	<i>Mdn</i> 12.00	2.87*	.59

* indicates $p < .01$

Research Question Four

The fourth research question investigated whether relationships between forms of problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) and components of sense of belonging (i.e., perceived faculty support, classroom comfort, perceived peer support, and feelings of isolation) observed in the general college

population extend to undergraduates with ADHD symptoms. The Pearson's correlation analysis could not be conducted because the assumptions of linear relationships and bivariate normality were violated for all of the paired variables based on visual inspections of the scatterplots. Furthermore, the assumptions for the Spearman's rank-order correlation analysis could not be conducted because the assumptions of monotonic relationships were violated for all of the paired variables based on visual inspections of the scatterplots. The Kendall's tau-b correlation is a nonparametric substitute for both Pearson's correlation and Spearman's correlation. Although a monotonic relationship between two variables is desired, it is not a required assumption of the Kendall's tau-b correlation. Thus, a series of non-parametric Kendall's tau-b correlation analyses were conducted to measure the directions and strengths of associations between problem-focused coping strategies (i.e., planning/self-management and seeking support from institutional resources) and components of sense of belonging (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation).

There were no statistically significant correlations between any of the aforementioned variables, including perceived faculty support and planning/self-management ($\tau_b = .01, p = .95$), perceived faculty support and seeking support from institutional resources ($\tau_b = -.20, p = .37$), perceived empathetic faculty understanding and planning/self-management ($\tau_b = .14, p = .53$), perceived empathetic faculty understanding and seeking support from institutional resources ($\tau_b = .23, p = .31$), classroom comfort and planning/self-management ($\tau_b = -.01, p = .95$), classroom comfort and seeking support from institutional resources ($\tau_b = -.07, p = .75$), perceived peer support and planning/self-management ($\tau_b = -.02, p = .94$), perceived peer support and seeking support from institutional resources ($\tau_b = .03, p = .88$), feelings of isolation and planning/self-

management ($\tau_b = .07, p = .78$), or feelings of isolation and seeking support from institutional resources ($\tau_b = .18, p = .43$).

Table 10. *Kendall's Tau-b Correlations between Forms of Problem-Focused Coping and Components of Sense of Belonging*

	Planning / Self- Management	Seeking Support from Institutional Resources
Perceived Faculty Support	.01	-.20
Perceived Empathetic Faculty Understanding	.14	.23
Classroom Comfort	-.01	-.07
Perceived Peer Support	-.02	.03
Feelings of Isolation	.07	.18

Chapter 5: Discussion

The primary purpose of the current study was to investigate the preliminary effects of a condensed six-week group psychosocial intervention, adapted from the Safren and colleagues (2005) adult ADHD CBT treatment manual, on problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) and sense of belonging (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduates with ADHD symptoms. An ancillary purpose of the current study was to investigate whether relationships between problem-focused coping and sense of belonging extended to undergraduates with ADHD symptoms.

Research Question One

The first research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms would significantly increase planning/self-management (problem-focused coping) among undergraduates with ADHD symptoms. Based on previous literature showing significant improvements in college students

with ADHD's academic functioning (LaCount et al., 2015; LaCount et al., 2018) and planning/self-management behavioural strategies from pre- to post-intervention (Anastopoulos & King, 2015; LaCount et al., 2018), it was hypothesized that undergraduates with ADHD would report significantly improved planning/self-management skills after participation in the current study's psychosocial intervention. Analysis of the Planning/Self-Management subscale scores from the CWCES revealed non-significant results from pre- to post-intervention, indicating that participants' planning/self-management behaviours did not change over time. There are five potential explanations for the non-significant results observed on the Planning/Self-Management subscale.

The first explanation is that in spite of the primary objective of the psychosocial intervention being to provide participants with strategies to manage their adult ADHD symptoms in university (i.e., planning/self-management coping strategies), the recruitment posters also advertised the group aspect of the intervention as an opportunity to meet other undergraduates with ADHD symptoms. Consequently, it is possible that participants self-referred themselves to the ADHD intervention with the primary intent of meeting peers who experience similar struggles in university as they do (i.e., peer support) as opposed to gaining new planning/self-management strategies.

The second explanation for the results is the semantic word choice used to phrase the Planning/Self-Management subscale items. Research suggests that college students with ADHD continue to struggle with symptoms and functional impairments, including poor planning/disorganization, distractibility, difficulties focusing and sustaining attention (Weyandt & DuPaul, 2006), procrastination (DuPaul et al., 2009; Kaminski et al., 2006), and poor time management skills (Reaser et al., 2007). Most of these symptom and functional impairments

were accounted for on the Planning/Self-Management CWCES subscale, which included items such as, “*I try to do a better job managing my time.*”, “*I try not to procrastinate when assignments are due.*”, “*I try to get more organized.*”, “*I try to prioritize my assignments.*”, and “*I try to get started on assignments early.*”. However, the phrasing of the items is ambiguous, as it emphasizes effort (i.e., “*I try to get started on my assignments early.*”) rather than outcome (i.e., “*I get started on my assignments early.*”). In hindsight, the wording of the planning/self-management items brings forth an issue surrounding construct validity, which was first brought to the researcher’s attention when items from the pre-intervention CWCES were scored, as many of the participants had underlined or circled the word “*try*”. This qualitative observation suggests that the Planning/Self-Management subscale was measuring how often participants reported *trying to use* planning/self-management coping rather than measuring how often participants reported *employing* this form of problem-focused coping.

The third possible explanation is that participants reported trying to use planning/self-management coping prior to their participation in the intervention, as evidenced by high pre-intervention scores on the Planning/Self-Management subscale from the CWCES. It may be that these high pre-intervention scores did not allow for the opportunity to detect any potential improvement. Furthermore, this explanation suggests that participants may have already been trying to use these problem-focused coping strategies quite regularly prior to their participation in the intervention. Unfortunately, the scale does not appear to measure how successful participants were in implementing these strategies. Although the mean Planning/Self-Management subscale score was high, it is important to note that the data did not support a ceiling effect given that the data was not negatively skewed.

A fourth explanation for these results is that the CWCES has not previously been used to measure change over time. Therefore, there is the potential that the scale is not sensitive enough to capture the effects of a psychosocial intervention on planning/self-management problem-focused coping within the college environment over time.

Finally, the CWCES has not previously been used to study undergraduates with ADHD. Given that ADHD is conceptualized as a performance deficit rather than a knowledge deficit (suggesting that individuals with ADHD know what they should do but do not accomplish what they intended to), it is plausible that the phrasing of the Planning/Self-Management items do not generalize from the general college population to the ADHD population.

Research Question Two

The second research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms would significantly increase seeking support from institutional resources (problem-focused coping) among undergraduates with ADHD symptoms. The current study attempted to replicate Anastopoulos and King's (2015) study, which showed an increase in the number of college students with ADHD who reported accessing on-campus resources following participation in a psychosocial intervention. However, analysis of the Seeking Support from Institutional Resources subscale revealed non-significant results from pre- to post-intervention, indicating that participants' seeking support from institutional resources behaviours did not change over time. There are five potential explanations for these results.

First, the majority of participants were not first-year students (mean year of study = 2.92 years), which may suggest that participants were already aware of or had already accessed many university resources. Consequently, there is the potential that the psychosocial intervention may

not have provided participants with any new information about available on-campus resources to change their resource support-seeking behaviours.

Second, it was hypothesized that participants may have lacked the opportunity to utilize some of these resources. For instance, some opportunities, such as joining a study group (i.e., “*I join a study group*”), may not have presented itself as the intervention was not centred around similar academic courses or program majors.

A third hypothesis is poor planning/disorganization (Weyandt & DuPaul, 2006) and time management skills (Reaser et al., 2007) characteristic of college students with ADHD may have impeded participants from accessing campus resources. This hypothesis is especially plausible given that on average, participants reported low scores on the Seeking Support from Institutional Resources subscale on the CWCES both pre- and post-intervention. Moreover, the poor planning and time-management theory is consistent with no change observed on the Planning/Self-Management subscale, as one must possess planning, organization, and time management skills to be able to access resources, such as attending a study group. Consequently, poor planning/disorganization (Weyandt & DuPaul, 2006), and time management skills (Reaser et al., 2007) characteristic of college students with ADHD may have impeded participants from seeking support from institutional resources.

A fourth additional hypothesis is that participants had already made a significant time commitment by attending the six-week intervention. Hence, perhaps participants could not manage to add any other time commitments to their already busy university schedules, such as joining a study group.

A fifth alternative hypothesis is that the CWCES has not previously been used to measure change over time. As a result, the Seeking Support from Institutional Resources subscale may

not be sensitive enough to detect the effects of a psychosocial intervention on this form of problem-focused coping.

Research Question Three

The third research question investigated whether participation in a six-week psychosocial group intervention specific to managing adult ADHD symptoms impacts sense of belonging to a post-secondary institution (i.e., perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and feelings of isolation) among undergraduates with ADHD symptoms. Hoffman and colleagues (2002) found college students' sense of belonging to their post-secondary institution can be cultivated through membership to a smaller community within the broader college community, as evidenced by participation in a six-week learning seminar with peers studying similar academic courses and program majors. More specifically, after participation in a learning community, college students reported significantly higher levels of perceived faculty support, perceived empathetic faculty understanding, classroom comfort, perceived peer support, and reduced feelings of isolation on the SOBS in comparison to their non-learning community peers (Hoffman et al., 2002). One main difference between Hoffman and colleagues' (2002) learning seminar and the current study's psychosocial intervention was what brought together and connected the students. More specifically, rather than introducing participants to peers who were experiencing similar collegiate challenges and stressors related to their academic courses/program majors, the current study's intervention introduced participants to peers who were experiencing similar collegiate challenges and stressors related to their ADHD symptomology. The current study's psychosocial intervention was the same duration as Hoffman and colleagues' (2002) academic intervention (i.e., six weeks) and similarly offered a small community within the broader campus community centered around

a common challenge (i.e., ADHD symptomology). Consequently, it was hypothesized that participants would report significantly improved feelings of perceived faculty support, perceived empathetic faculty understanding, classroom comfort, and perceived peer support, while reporting significantly reduced feelings of isolation from pre- to post-intervention.

Perceived faculty support. Analysis of the Perceived Faculty Support subscale scores from the SOBS revealed non-significant results from pre- to post-intervention, indicating that participants' perceived faculty support did not change after participation in the intervention. It was concluded that the psychosocial intervention did not improve undergraduates with ADHD symptoms' perceived faculty support, which is inconsistent with Hoffman and colleagues (2002) finding that participation in an academic intervention resulted in significantly higher levels of perceived faculty support. Unlike Hoffman and colleagues' (2002) study, which had professors facilitate the learning community seminars, the current study's psychosocial intervention was facilitated by two Master's students. Thus, although information on how to build academic connections with professors/faculty members was added to adapt the psychosocial intervention to suit university students, it is possible that participants regarded the Master's student facilitators as an additional source of peer support as opposed to faculty support.

Furthermore, the current psychosocial intervention did not directly target faculty support (i.e., coaching professors on how to support undergraduate students with ADHD). Instead, it encouraged participants to self-advocate their learning needs to professors and faculty members. Although the psychosocial intervention indirectly targeted faculty support via self-advocacy, participants' perceived faculty support ratings were dependent on how supported, and comfortable faculty members made them feel in response to their requests for help (i.e., "*I feel comfortable seeking help from a teacher before or after class.*"). Thus, seeing as the

psychosocial intervention did not directly target professors/faculty members, it cannot be expected that it would improve participants' perceived faculty support.

Perceived empathetic faculty understanding. Analysis of the Perceived Empathetic Faculty Understanding subscale scores from the SOBS revealed non-significant results from pre- to post-intervention, indicating that participants' perceived empathetic faculty understanding did not change after participation in the intervention. It was concluded that the psychosocial intervention did not improve undergraduates with ADHD symptoms' perceived empathetic faculty understanding, which is inconsistent with Hoffman and colleagues (2002) finding that participation in an academic intervention resulted in significantly higher levels of perceived empathetic faculty understanding. Again, the current psychosocial intervention did not directly target empathetic faculty understanding (i.e., coaching professors on how to empathize with undergraduate students with ADHD). Instead, it encouraged participants to share their learning challenges with professors/faculty members. Although the psychosocial intervention indirectly targeted empathetic faculty understanding via self-disclosure, participants' perceived empathetic faculty understanding ratings were dependent on how empathetic faculty members were in response to their self-disclosures of personal, or sensitive information (i.e., *"I feel that a faculty member really tried to understand my problem when I talked about it."*). Thus, seeing as the psychosocial intervention did not directly target professors/faculty members, it cannot be expected that it would improve participants' perceived empathetic faculty understanding.

Classroom comfort. Analysis of the Classroom Comfort subscale scores from the SOBS revealed non-significant results from pre- to post-intervention, indicating that participants' classroom comfort did not change after participation in the intervention. It was concluded that the psychosocial intervention did not improve undergraduates with ADHD symptoms' classroom

comfort, which is inconsistent with Hoffman and colleagues (2002) finding that participation in an academic intervention resulted in significantly higher levels of classroom comfort. It is posited that there was no difference in participants' classroom comfort (i.e., "*I feel comfortable contributing to class discussions.*") because, unlike Hoffman and colleagues' (2002) learning community seminar, the current study's psychosocial intervention did not include academic content specific to participants' areas of study. Consequently, providing academic content may be necessary to increase understanding and knowledge of academic content before any improvements in classroom comfort can be observed.

Perceived peer support. Analysis of the Perceived Peer Support subscale scores from the SOBS revealed a statistically significant group mean increase from pre- to post-intervention with medium effect size, indicating a statistically significant medium degree of clinically meaningful improvement in participants' perceived peer support after participation in the intervention. It was concluded that the psychosocial intervention significantly improved perceived peer support among undergraduates with ADHD symptoms. More specifically, it was concluded that sharing similar struggles facilitated supportive peer interactions among undergraduates with ADHD symptoms within the psychosocial intervention, as it provided inherent opportunities for participants to both be helped and help their peers cope with collegiate challenges and stressors related to their ADHD symptomology. This finding extends that of Hoffman and colleagues (2002), who similarly concluded that their academic intervention facilitated peer support among college students by permitting supportive peer interaction centered around common academic challenges and stressors.

Similarly, a study investigating a group CBT program for adults with ADHD found that hearing other participants' personal experiences specific to ADHD and sharing one's own

personal ADHD experiences were highly valued by participants and reported to be an essential aspect of the intervention (Bramham et al., 2009). Moreover, college students with ADHD have qualitatively identified gaining insight about their ADHD diagnosis by learning from experiences, acknowledging their ADHD diagnosis, and opening up as helping their overall adjustment to college (Meaux et al., 2009). Additionally, information on how to build academic connections with classmates may have also contributed to the observed improvement in undergraduates with ADHD symptoms' self-reported perceived peer support, as they may have taken more initiative to connect with their peers (i.e., classmates) outside of the psychosocial intervention. Overall, improving peer support may be especially imperative for undergraduates with ADHD, given that they struggle with social adjustment and social skills necessary to connect with peers in college (Shaw-Zirt et al., 2005).

Feelings of isolation. Analysis of the Feelings of Isolation subscale scores from the SOBS revealed a statistically significant median increase from pre- to post-intervention with medium effect size, indicating a statistically significant medium degree of clinically meaningful improvement in participants' feelings of isolation after participation in the intervention. It was concluded that participation in the psychosocial intervention significantly reduced undergraduates with ADHD symptoms' feelings of isolation. This finding is consistent with that of Hoffman and colleagues (2002), who concluded that their academic intervention resulted in reduced feelings of isolation. Additionally, the current study's findings of improved perceived peer support and reduced feelings of isolation support the notion that sense of belonging is conceptualized as a component of interpersonal connectedness most related to social support and most dissimilar to loneliness (Hagerty et al., 1996). It is reasoned that the current psychosocial intervention provided a unique opportunity for participants to connect with other undergraduates

with ADHD who may experience similar challenges and stressors in university related to their ADHD symptomology, which resulted in both improved perceived peer support and reduced feelings of isolation. Perhaps participants identified with the personal experiences of other participants within the group, which could have validated that they are not alone in their struggles with ADHD symptomology and may, in turn, validated that they belong in university, or at least within a small school community/university-based group (i.e., the ADHD Skills Workshop).

Research Question Four

The fourth research question investigated whether relationships between problem-focused coping strategies and sense of belonging observed in the general college population extend to undergraduates with ADHD symptoms. Previous research (Ackermann & Morrow, 2007) found that forms of problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) were positively associated with components of sense of belonging (i.e., perceived faculty support, classroom comfort, and perceived peer support). Moreover, both forms of problem-focused coping (i.e., planning/self-management and seeking support from institutional resources) were found to have an inverse relationship with the feelings of isolation component of sense of belonging. However, the Ackermann and Morrow (2007) study did not specifically investigate relationships between these forms of problem-focused coping and perceived empathetic faculty understanding, as they included Perceived Empathetic Faculty Understanding items under the Perceived Faculty Support subscale. Given that one of the current study's primary objectives was to replicate Hoffman and colleagues' (2002) sense of belonging intervention findings, the Perceived Empathetic Faculty Understanding and Perceived Faculty Support subscales were investigated separately. Accordingly, it was hypothesized that

problem-focused coping within the college environment and one's sense of belonging to a post-secondary institution were related psychosocial constructs. More specifically, it was predicted that associations between problem-focused coping and sense of belonging would be consistent among undergraduates with ADHD symptoms to those found among the general college population by Ackermann and Morrow (2007). However, none of the correlations between the problem-focused subscales from the CWCES and the sense of belonging components from the SOBS were significantly associated with one another. These non-significant findings suggest that the relationships between forms of problem-focused coping within the college environment and components of sense of belonging to a post-secondary institution, as previously observed in the general population, did not extend to undergraduates with ADHD symptoms. There are two competing hypotheses as to why forms of problem-focused coping and components of sense of belonging were not associated among undergraduates with ADHD symptoms.

First, the previous study (Ackermann & Morrow, 2007) did not investigate the relationships between sense of belonging components and forms of problem-focused coping within the college environment over time, as it did not include an intervention component. Given that the current study included an intervention component and found only significant improvement on sense of belonging components from the SOBS (i.e., perceived peer support and feelings of isolation) and not on the problem-focused coping subscales from the CWCES, may support that sense of belonging and problem-focused coping within the college environment are more independent/unrelated constructs than Ackermann and Morrow's (2007) findings previously suggested.

Alternatively, these psychosocial constructs (i.e., forms of problem-focused coping and components of sense of belonging) may be related but differ in the ADHD population from the

general college population. However, considering that relationships between the two problem-focused subscales from the CWCES and the five sense of belonging components from the SOBS have only previously been found in one study that sampled the general college population (Ackermann & Morrow, 2007), it is important to highlight that this fourth research question was particularly exploratory.

Implications

The results from the current study have several practical and theoretical implications. First and foremost, undergraduates with clinically significant ADHD symptoms reported improved perceived peer support and reduced feelings of isolation after participation in a six-week psychosocial intervention adapted from the Safren and colleagues' (2005) *Mastering Your Adult ADHD: A Cognitive-Behavioural Treatment Program Therapist's Guide*. The current study adds to existent literature findings of reduced symptoms and improved academic functioning (Anastopoulos & King, 2015; LaCount et al., 2015; LaCount et al., 2018), more specifically that participation in an adapted adult ADHD psychosocial intervention can improve components of undergraduates with ADHD symptoms' sense of belonging to their university.

Furthermore, sense of belonging has recently been identified as an important psychosocial construct associated with adjustment in college (Freeman et al., 2007; Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Pittman & Richmond, 2007; 2008; Tinto, 1999; Won et al., 2018). Although sense of belonging is associated with many positive outcomes in college, initiatives to foster or facilitate its development among college students are limited. The current study partially extends Hoffman and colleagues' (2002) findings that college students' participation in a six-week learning seminar centered around academic-specific challenges resulted in higher levels of self-reported sense of belonging on the SOBS. More

specifically, the current study found undergraduate students with ADHD symptoms self-reported significant improvements on two of five components of sense of belonging on the SOBS (i.e., perceived peer support and feelings of isolation) following membership to a six-week psychosocial intervention centered around ADHD-specific challenges. Furthermore, the current study's findings support that positive peer relationships, in addition to the encouragement of diversity and difference, are thought to foster a caring, supportive, and welcoming university environment critical to nurturing sense of belonging (O'Keeffe, 2013). Although the participants within the group were similar in their neurodevelopment (i.e., ADHD symptomology), the current study's psychosocial intervention (i.e., ADHD Skills Workshop) was a university-based community that acknowledged and supported participants' neurodiversity from that of the general university population. Overall, the current study's findings demonstrate the potential for a condensed six-week psychosocial group intervention adapted from an adult ADHD CBT treatment manual (Safren et al., 2005) to cultivate undergraduate students with ADHD symptoms' sense of belonging to their university. Consequently, these findings call for post-secondary institutions to develop and implement similar psychosocial intervention initiatives for college students with ADHD.

Moreover, sense of belonging has been conceptualized as a component of interpersonal connectedness most related to social support and most dissimilar to loneliness (Hagerty, Williams, Coyne, & Early, 1996). Conversely, loneliness is believed to be a natural consequence of failing to connect with others (Hagerty & Patusky, 1995), whereas the perception of being supported is thought to stem from the belief that one is well-integrated within a social network with adequate resources (Hoffman et al., 2002). The current study's findings of both improved perceived peer support and reduced feelings of isolation, further suggest that peer support and

loneliness/feelings of isolation are similarly related constructs and potentially two sides of the same coin. Likewise, a stronger sense of belonging has previously been found to correlate with lower levels of loneliness and depression among college students (Mounts, 2004).

Additionally, the importance of social support within the college community has been evidenced by a lack of peer support negatively correlating with college students' adjustment and achievement in college (Dennis et al., 2005). Thus, previous research supports the practical significance and clinical importance of improving peer support and reducing feelings of isolation among all college students, especially those with ADHD, given that they experience comorbid anxiety and depression at higher rates than the general college population (Anastopoulos et al., 2018). Moreover, seeing as sense of belonging positively correlates with academic persistence/student retention (Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Tinto, 1999), lends support that improved peer support and reduced feelings of isolation may contribute to positive long-term outcomes of academic persistence and degree completion among college students with ADHD. Enhancing sense of belonging among college students with ADHD may be especially crucial considering they are a population that is less likely to graduate from college and more likely to be underemployed in lower-status occupations (APA, 2013; Barkley et al., 2008; Kuriyan et al., 2013).

Limitations

In light of the significant findings, there are several limitations to the current study, specifically regarding sample characteristics and research design that should be taken into consideration. More specifically, there are eight identified limitations related to the current study's sample characteristics and three identified limitations related to the current study's research design.

Sample limitations. The first and perhaps most salient limitation of the sample's characteristics was its small size, which reduced statistical power to find potential significance on other subscales. A small sample size is not unusual for intervention studies, especially those investigating college students with ADHD, as high attrition rates are common.

A second limitation of the sample was that not all participants had a formal ADHD diagnosis. In an attempt to be inclusive to all undergraduates who identify as struggling with ADHD symptoms, the BAARS-IV Current Symptoms self-report was employed to confirm ADHD symptomology. Consequently, participants who reported clinically significant ADHD symptoms but did not report having a previous ADHD diagnosis were included in the sample. This inclusion criterion was not unique to the current study, as previous studies investigating similar ADHD interventions included college students with either a formal diagnosis or self-reported symptoms (Anastopoulos & King, 2015; LaCount et al., 2015; LaCount et al., 2018).

Third, although the current study confirmed self-reported symptoms for all participants (even those with a formal diagnosis), informant-report symptoms from the BAARS-IV were not collected to corroborate self-reported symptoms. Having a second informant to rate participants' symptoms could have provided inter-rater reliability. Despite lacking corroborated ADHD symptom reports, participants appeared to seek out the psychosocial intervention for ADHD support. For example, the intervention was advertised specifically for undergraduates with ADHD; participants self-referred themselves and were not provided any reward or compensation for their participation.

A fourth limitation of the sample was that many participants reported having comorbid mental health diagnoses, which could have impacted their sense of perceived peer support and feelings of isolation. For instance, it is common for individuals with anxiety and depression to

socially isolate themselves (APA, 2013), which could exacerbate social skill difficulties (Shaw-Zirt et al., 2005) and social adjustment challenges (Norvilitis et al., 2010) typical of college students with ADHD.

Fifth, although the prevalence rate for ADHD is generally higher among males, the current sample was disproportionately female. Given that female college students report experiencing higher stress levels (Brougham et al., 2009; Hudd et al. 2000), it is hypothesized that this may have contributed to the overrepresentation of females who sought out the psychosocial intervention.

Sixth, although ADHD-C is the most common subtype, the current sample had an equal number of participants with formal ADHD-C and ADHD-I diagnoses, and an even higher total inattentive representation when considering participants with self-reported symptoms. This disproportionate subtype distribution may be explained by the predominately female sample, seeing as females are most often diagnosed with ADHD-I (APA, 2013; Biederman et al., 2005).

Seventh, the mean age of the sample was a non-traditional age for undergraduate students. Being a non-traditional age student alone could have impacted participants' sense of perceived peer support and feelings of isolation in university, especially considering that non-traditional age students report more stress related to responsibility and obligations at home (i.e., multiple roles, such as a parent, employee, and student; Dill & Henley, 1998). These added demands of being a non-traditional age student may lead to heightened feelings of isolation from classmates, and in turn, fewer opportunities to feel supported by peers.

The eighth and final limitation was that participants self-referred/volunteered to not only participate in the psychosocial intervention but to participate in the research component as well. Thus, the study relied on convenience sampling, and consequently, participants in the current

study may differ from the general undergraduate population with ADHD. For instance, the participants in the study may have been more intrinsically motivated to change, as potentially evidenced by them registering for the psychosocial intervention, as they may have felt less supported by peers and more isolated than undergraduates with ADHD who did not participate in the intervention and study.

In conclusion, these aforementioned sample characteristics (i.e., size, diagnostics, demographics, and convenience sampling) may limit the external validity of the current study's results to generalize to the broader population or a larger sample of undergraduates with ADHD.

Research design limitations. The first and perhaps most prominent limitation of the current study's research design was that there was no control group to draw a comparison. Given the small sample size, there were insufficient participants to create a waitlist control group. Furthermore, withholding participation from the psychosocial intervention for the duration of the semester for the sole purpose of forming a control group may have been unethical, as there could have been potential negative implications for hopeful participants (i.e., less peer support and more isolation). Moreover, it would have limited the number of participants in the intervention, potentially impacting the therapeutic aspect of peer support within the group. However, without a control group, it is difficult to ascertain whether the findings resulted from the intervention itself or from time sampling (i.e., comparing different points in the semester).

A second limitation of the current study's research design was that the outcome measures solely relied on self-report questionnaires. As with all self-report questionnaires, there is a potential risk of biases and errors, such as social desirability and recall errors. For instance, adults with ADHD have specifically been found to underreport and underestimate on self-report

questionnaires (Manor et al., 2012). The SOBS and CWCES are not normed and seeing as they are psychosocial constructs, they do not have versions for other informants to fill out.

Consequently, it was not possible to obtain inter-rater reliability on the outcome measures used in the current study.

The third and final limitation of the current study's research design was that it was strictly quantitative. In hindsight, including a qualitative measure to form a mixed-methods research design may have provided more in-depth insight into the problem-focused coping and sense of belonging of undergraduates with ADHD symptoms. For instance, positive anecdotal feedback that participants shared with the intervention facilitator/researcher could not be included in this study. Thus, the quantitative nature of the current study may have limited potential findings and implications.

Future Directions

Considering that findings of improved components of sense of belonging among undergraduates with ADHD symptoms after participation in an adapted adult ADHD psychosocial intervention are limited to the current study, calls for more replication studies to determine the efficacy of psychosocial interventions on college students with ADHD's sense of belonging. Furthermore, despite a fair amount of existent research investigating minority and marginalized college students' sense of belonging (Won et al., 2018), to date, no research has investigated sense of belonging among college students with ADHD. Although the current study did investigate differences between baseline and post-intervention levels of sense of belonging, it did not compare undergraduates with ADHD's baseline level of sense of belonging to that of the general university population. Further research is required to conclude whether college students with ADHD feel a lessened sense of belonging to their post-secondary institution in comparison

to their non-ADHD peers, which may be a contributing factor to college students with ADHD's lack of academic persistence/student retention (Barkley et al., 2008; Kuriyan et al., 2013).

Moreover, in addition to sense of belonging, there currently exists a dearth in research investigating coping methods among college students with ADHD. Existent literature investigating college students with ADHD's coping methods (Kaminski et al., 2006; Meaux et al., 2009) did not formally categorize strategies as either problem-focused coping or emotion-focused coping. There are potential clinical implications for future research to investigate problem-focused coping and emotion-focused coping separately, given that problem-focused coping strategies are widely associated with adaptive behaviours (Carver et al., 1989; Kim & Seidlitz, 2002; Misra & McKean, 2000; Struthers et al., 2000; Sasaki & Yamasaki, 2007), and emotion-focused coping strategies have less consistent adaptive associations in college (Carver et al., 1989; Kim & Seidlitz, 2002; Sasaki & Yamasaki, 2007; Scheier et al., 1994). Again, although the current study investigated differences between baseline and post-intervention levels of problem-focused coping, it did not compare undergraduates with ADHD's baseline level of problem-focused coping with that of the general university population. Further research is required to conclude whether college students with ADHD's implementation of problem-focused coping (i.e., seeking support from institutional resources) differs from that of the general university population.

Recently several studies (Anastopoulos & King, 2015; LaCount et al., 2015; LaCount et al., 2018) have investigated adapted adult ADHD CBT programs for college students with ADHD with some impressive post-intervention outcomes (i.e., reduced symptoms and improved academic functioning). While improvements in problem-focused coping (planning/self-management and seeking support from institutional resources) among college students with

ADHD have previously been found after participation in adapted adult ADHD psychosocial interventions, these findings are limited to only one or two studies (Anastopoulos & King, 2015; LaCount et al., 2018), and were not replicated in the current study. Further replication studies are required to determine the efficacy of psychosocial interventions on both planning/self-management and seeking support from institutional resources behaviours among college students with ADHD.

Furthermore, seeing as the current study was the first to use the CWCES to measure the effects of an intervention, more research investigating the CWCES' ability to detect change (i.e., pre- to post-intervention) is needed. Additionally, more research is needed to determine whether the ambiguously worded Planning/Self-Management subscale from the CWCES, which emphasizes effort (i.e., "I *try* to get started on my assignments early.") rather than outcome (i.e., "I get started on my assignments early."), generalizes from the general college population to college students with ADHD. Lastly, further research is necessary before it can be reasoned that college students' problem-focused coping within the college environment (as measured by the CWCES) and sense of belonging (as measured by the SOBS) are related psychological constructs, first within the general college population before comparisons and generalizations can extend to the ADHD college population.

Conclusions

Collegiate stress may result from overwhelming workloads and inefficient time management skills (Pierceall & Keim, 2007). Consequently, college students with ADHD are thought to struggle more than their non-ADHD peers (DuPaul et al., 2009; Kaminski et al., 2006; Norvilitis et al., 2010; Norwalk et al., 2008), as research suggests they continue to struggle with ADHD symptom manifestations during college, such as poor planning/disorganization (Weyandt

& DuPaul, 2006), and poor time management skills (Reaser et al., 2007). Consequently, students with ADHD are less likely than their non-ADHD peers to graduate from college (Barkley et al., 2008; Kuriyan et al., 2013). Considering college students' sense of belonging to their post-secondary institution is associated with academic persistence/student retention (Hausmann et al., 2007; Morrow & Ackermann, 2012; O'Keeffe, 2013; Tinto, 1999), research suggests the importance of strengthening college students with ADHD's sense of belonging to their post-secondary institution. Enhanced sense of belonging can be accomplished by student membership to a smaller college-based community offered within the broader campus (Hoffman et al., 2002). Furthermore, more effective use of problem-focused coping strategies (i.e., superior time management skills) may differentiate academically high-achieving college students with ADHD from their academically lower-achieving ADHD peers (Kaminski et al., 2006), which supports the need for universities to offer adapted adult ADHD psychosocial interventions similar to that of Anastopoulos and King (2015).

Inspired by Hoffman and colleagues' (2002) sense of belonging intervention and by Anastopoulos and King's (2015) problem-focused coping intervention, the current study sought to investigate the effects of an adapted adult ADHD psychosocial intervention on sense of belonging and problem-focused coping in undergraduates with ADHD symptoms. In conclusion, the current study's findings suggest that a six-week group psychosocial intervention based on an adult ADHD CBT manual (Safren et al., 2005) and adapted for university undergraduate students with ADHD symptoms can improve their sense of peer support and reduce their sense of isolation within the university environment. However, no changes were reported on the perceived faculty support, perceived empathetic faculty understanding, or classroom comfort components of sense of belonging. Nor were any changes detected in

planning/self-management or seeking supporting from institutional resources problem-focused coping behaviours. Moreover, no associations were found between these problem-focused strategies and any components of sense of belonging. However, given the aforementioned limitations of the current study, further research is necessary before these results can be considered generalizable.

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APPENDIX A: Demographic Questionnaire

ADHD Skills Workshop - Demographic Questionnaire

Directions: Please provide one answer to each of the following demographic questions unless the question specifies otherwise.

1. **Gender:** Male ____, Female ____, Prefer Not to Say ____, None of these apply to me, I prefer to identify as _____.

2. **Ethnicity:** _____.

3. **Age:** _____ years.

4. **How did you find out about the ADHD Skills Workshop?** _____
_____.

5. **Formal ADHD Diagnosis?** YES ____, NO ____.
 - a. **If YES, Age of ADHD Diagnosis:** _____ years.

 - b. **If YES, ADHD Subtype:**

Inattentive ____,
Hyperactive-Impulsive ____,
Combined (both Inattentive AND Hyperactive-Impulsive) ____,
I Don't Know/Unsure ____.

 - c. **If YES, do you currently have a prescribed medication to treat your ADHD?**

YES ____, NO ____.

 - d. **If YES, when do you take your prescribed medication? (You may select more than one response, if needed.)**

All of the Time ____,
For Class ____,
For Tests/Exams ____,
For Work ____,
For Social Activities/Engagements ____,
Other, please specify: _____.

 - e. **If YES, do you take the recommended dose as prescribed on the label?**

YES ____, NO ____.

- f. If NO, are you please specify whether you:**
- Take a Higher Dosage than Recommended ____,
 Take a Lower Dosage than Recommended ____.
- 6. Please list any other formal psychological diagnosis you have received (e.g., anxiety, depression, a specific learning disability, etc.)?**
- _____
- _____
- a. Are you currently taking a prescribed medication to treat this mental health diagnosis? YES ____, NO ____.**
- i. If YES, and you indicated more than one diagnosis, please specify for which disorders** _____
- _____
- 7. Are you currently registered with Student Accessibilities Services?**
- YES ____, NO ____.
- 8. Are you currently enrolled as an undergraduate student? YES ____, NO ____.**
- 9. Current Program of Study:** _____
- 10. Current Year of Study:** 1st ____, 2nd ____, 3rd ____, 4th ____, 5th ____, Other, please specify:

- 11. Current Semester of Study:** Fall ____, Winter ____.
- 12. Current Course Load:** Part-time (1-2 courses) ____, Full-time (3+ courses) ____.
- 13. Current Course Load Delivery:**
- On-Campus ____, Online ____, Blended (both on-campus and on-line) ____.
- 14. Are you currently enrolled in a Co-operative Education/Internship Program? YES ____, NO ____.**
- 15. Did you transfer to the University of Calgary from another post-secondary educational institution? YES ____, NO ____.**
- 16. Have you ever withdrawn from a post-secondary educational institution?**

YES ____, NO ____.

17. Have you ever been on academic probation at a post-secondary educational institution?

YES ____, NO ____.

18. Have you received any academic scholarships during your post-secondary education?

YES ____, NO ____.

19. Have you ever failed a post-secondary course? YES ____, NO ____.

20. How much time and effort do you put into your studies?

Minimal Amount ____, Moderate Amount ____, Significant Amount ____.

21. Based on your previous grades, what is your estimated GPA (4.00 scale) for the semester?

___ 4.00 = 90-100%

___ 3.90 = 85-89%

___ 3.70 = 80-84%

___ 3.30 = 77-79%

___ 3.00 = 73-76%

___ 2.70 = 70-72%

___ 2.30 = 67-69%

___ 2.00 = 63-66%

___ 1.70 = 60-62%

___ 1.30 = 57-59%

___ 1.00 = 53-56%

___ 0.70 = 50-52%

APPENDIX B: BAARS-IV Self-Report Current Symptoms

BAARS-IV: Self-Report: Current Symptoms

Name: _____ Date: _____

Sex: (circle one) Male Female Age: _____

For the first 27 items, please circle the number next to each item below that best describes your behavior **DURING THE PAST 6 MONTHS**. Then answer the remaining three questions. Please ignore the sections marked "Office Use Only."

Section 1 (Inattention)	Never or rarely	Some-times	Often	Very often
1. Fail to give close attention to details or make careless mistakes in my work or other activities	1	2	3	4
2. Difficulty sustaining my attention in tasks or fun activities	1	2	3	4
3. Don't listen when spoken to directly	1	2	3	4
4. Don't follow through on instructions and fail to finish work or chores.	1	2	3	4
5. Have difficulty organizing tasks and activities	1	2	3	4
6. Avoid, dislike, or am reluctant to engage in tasks that require sustained mental effort	1	2	3	4
7. Lose things necessary for tasks or activities	1	2	3	4
8. Easily distracted by extraneous stimuli or irrelevant thoughts.	1	2	3	4
9. Forgetful in daily activities	1	2	3	4
Office Use Only (Section 1) Total Score: _____ Symptom Count: _____				
Section 2 (Hyperactivity)	Never or rarely	Some-times	Often	Very often
10. Fidget with hands or feet or squirm in seat	1	2	3	4
11. Leave my seat in classrooms or in other situations in which remaining seated is expected	1	2	3	4
12. Shift around excessively or feel restless or hemmed in	1	2	3	4
13. Have difficulty engaging in leisure activities quietly (feel uncomfortable, or am loud or noisy)	1	2	3	4
14. I am "on the go" or act as if "driven by a motor" (or I feel like I have to be busy or always doing something)	1	2	3	4
Office Use Only (Section 2) Total Score: _____ Symptom Count: _____				

(continued)

Section 3 (Impulsivity)	Never or rarely	Sometimes	Often	Very often
15. Talk excessively (in social situations)	1	2	3	4
16. Blur out answers before questions have been completed, complete others' sentences, or jump the gun	1	2	3	4
17. Have difficulty awaiting my turn	1	2	3	4
18. Interrupt or intrude on others (butt into conversations or activities without permission or take over what others are doing)	1	2	3	4
Office use only (Section 3) Total Score: _____ Symptom Count: _____				
Section 4 (Sluggish Cognitive Tempo)	Never or rarely	Sometimes	Often	Very often
19. Prone to daydreaming when I should have been concentrating on something or working	1	2	3	4
20. Have trouble staying alert or awake in boring situations	1	2	3	4
21. Easily confused	1	2	3	4
22. Easily bored	1	2	3	4
23. Spacey or "in a fog"	1	2	3	4
24. Lethargic, more tired than others	1	2	3	4
25. Underactive or have less energy than others	1	2	3	4
26. Slow moving	1	2	3	4
27. I don't seem to process information as quickly or as accurately as others.	1	2	3	4
Office use only (Section 4) Total Score: _____ Symptom Count: _____				
Total Scores for Entire Scale:				
Sum of Sections Raw Scores 1 – 3 Total ADHD Score _____				
Section 1 Symptom Count _____				
Sum of Sections 2 and 3 Symptom Counts _____				
Total ADHD Symptom Count _____ (Sum of 1 – 3)				
SCT Symptom Count _____				

(continued)

Section 5

28. Did you experience *any* of these 27 symptoms at least "Often" or more frequently (Did you circle a 3 or a 4 above)? **No** **Yes** (Circle one)

29. If so, how old were you when these symptoms began? (Fill in the blank)

I was _____ years old.

30. If so, in which of these settings did those symptoms impair your functioning? Place a *check mark* (✓) next to all of the areas that apply to you.

- _____ School
- _____ Home
- _____ Work
- _____ Social Relationships

If you checked any of the domains in item # 30 indicating settings in which symptoms impair your functioning, please provide examples of your current difficulties in the appropriate spaces below.

School: _____

Home: _____

Work: _____

Social Relationships: _____

FEEL FREE TO ATTACH ADDITIONAL PAGES TO FULLY ANSWER THESE QUESTIONS IF NECESSARY.

APPENDIX C: Coping with the College Environment Scale (CWCES)

Coping with the College Environment Scale

Directions: Based on your experience at this institution during the current school year, please rate how much you agree with each statement using the following scale (0 = Never; 1 = Rarely; 2 = Sometimes; and 3 = Often). Indicate your response by circling one of the numbers to the right of each statement.

	Never	Rarely	Sometimes	Often
1. I try to do a better job managing my time.	0	1	2	3
2. I try not to procrastinate when assignments are due.	0	1	2	3
3. I try to get more organized.	0	1	2	3
4. I try to get enough sleep.	0	1	2	3
5. I try to prioritize my assignments.	0	1	2	3
6. I try to keep a positive outlook.	0	1	2	3
7. I focus on the future.	0	1	2	3
8. I try to get started on assignments early.	0	1	2	3
9. I go to an on-campus event (e.g., lecture, meeting) with friends.	0	1	2	3
10. I go talk with a school counselor.	0	1	2	3
11. I go talk with my professor.	0	1	2	3
12. I join a study group.	0	1	2	3
13. I get involved with school activities.	0	1	2	3
14. I ask my classmates for help.	0	1	2	3
15. I ask my professors for help.	0	1	2	3
16. I take a pill to relax me.	0	1	2	3
17. I go out and drink.	0	1	2	3
18. I smoke a cigarette.	0	1	2	3
19. I drink alone at home.	0	1	2	3
20. I go to a bar with friends.	0	1	2	3

21. I smoke marijuana.	0	1	2	3
22. I hang out with my friends.	0	1	2	3
23. I talk with a friend on the phone.	0	1	2	3
24. I talk with my friends about what is stressing me out.	0	1	2	3
25. I go out and party with friends.	0	1	2	3
26. I read a religious scripture (e.g., the Bible, the Quran, the Vedas, etc.)	0	1	2	3
27. I pray.	0	1	2	3
28. I go to a religious worship (e.g., church, mosque, synagogue, temple, etc.)	0	1	2	3
29. I spend time with my family.	0	1	2	3
30. I talk with my family about what is stressing me out.	0	1	2	3
31. I go away and visit family.	0	1	2	3

APPENDIX D: Sense of Belonging Scale (SOBS)

Sense of Belonging Scale

Directions: Based on your experience at this institution during the current school year, please rate how much you agree with each statement using the following scale. Indicate your response by filling in one of the ovals to the right of each statement.

	Completely Untrue				
	Mostly Untrue				
	Equally True and Untrue				
	Mostly True				
	Completely True				
1. I have met with classmates outside of class to study for an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It is difficult to meet other students in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel comfortable talking about a problem with faculty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. If I miss class, I know students who I could get the notes from.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I feel comfortable contributing to class discussions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I discuss events which happen outside of class with my classmates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I feel comfortable asking a teacher for help if I do not understand course-related material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I feel that a faculty member would be sensitive to my difficulties if I shared them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I feel comfortable asking a question in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. No one in my classes knows anything personal about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I have discussed personal matters with students who I met in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I feel comfortable socializing with a faculty member outside of class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I rarely talk to other students in my classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I feel comfortable volunteering ideas or opinions in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I feel that a faculty member would be sympathetic if I was upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I could contact another student from class if I had a question about an assignment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I feel that a faculty member would take the time to talk to me if I needed help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Other students are helpful in reminding me when assignments are due or when tests are approaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. If I had a reason, I would feel comfortable seeking help from a faculty member outside of class time (i.e. during office hours, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I know very few people in my classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I feel comfortable seeking help from a teacher before or after class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I have developed personal relationships with other students in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I feel that a faculty member really tried to understand my problem when I talked about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I invite people I know from class to do things socially.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I feel comfortable asking a teacher for help with a personal problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. Speaking in class is easy because I feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

DO YOU HAVE ADHD?

ARE YOU AN UNDERGRAD STUDENT?


JOIN OUR GROUP!

We are running a 6-week workshop (6 x 60 min. sessions)
for students with ADHD to help build skills in:

- ✓ **Time Management**
- ✓ **Organization**
- ✓ **Study Habits**

You will gain new skills, meet other students with ADHD,
and connect with valuable campus resources!

FOR MORE INFO., OR TO PARTICIPATE PLEASE CONTACT:

LAURA @ 

There will also be the opportunity to participate in research.
The University of Calgary Conjoint Faculties Research Ethics Board has approved
this study.



adhdkids@ucalgary.ca

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APPENDIX F: Recruitment Letter



Dear University of Calgary undergraduate student,

I am a master's student in the School and Applied Child Psychology program at the Werklund School of Education at the University of Calgary. I am facilitating the ADHD Skills Workshop, which is a program designed to enhance the university experience of undergraduate students with ADHD. Participation in the ADHD Skills Workshop involves attending 6 weekly group sessions (6 sessions x 1 hour each). During these sessions, you will meet other undergraduate students with ADHD and be provided with strategies intended to help you cope with academic demands, self-advocate, and access resources available to assist undergraduate students with ADHD. Topics covered during the workshop include: reducing distractibility, managing procrastination, task prioritization, planning, time management, and organization.

If you choose to join the ADHD Skills Workshop, you will also be given the opportunity to participate in a research study. Research participation is completely confidential, as any data that is collected will be anonymized. Your participation in the research study will help determine the efficacy of the program, which in turn may help future undergraduate students with ADHD. It is important to note that participation in the ADHD Skills Workshop does not require participation in the research study. In other words, you are welcome to join the ADHD Skills Workshop regardless of whether you choose to complete the research component. The University of Calgary Conjoint Faculties Research Ethics Board has approved this study.

Please share this information with other undergraduate students with ADHD who you feel may benefit from participating in this program. If you have any questions or are interested in participating, please do not hesitate to contact me at: adhdkids@ucalgary.ca.

Thank you.

Sincerely,

Laura L. Gordon, Master's Student
School and Applied Child Psychology, Werklund School of Education

Principal Investigator: Dr. Emma A. Climie, Ph.D., R. Psych
School and Applied Child Psychology, Werklund School of Education

APPENDIX G: Informed Consent



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

Laura Gordon, Master of Education Psychology,

Supervisor: Emma A. Climie, Ph.D., R. Psych.,

Title of Project: ADHD Skills: Building Capacity in Undergraduate Students with ADHD

Sponsor: Campus Mental Health Strategy Grant

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

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.

You may choose to participate in the ADHD Skills program while opting out of the research. Participation in this research project is completely voluntary and does not impact your involvement with the ADHD Skills program. All research information will be kept confidential and your name will not be associated with any of the findings. You are free to discontinue participation at any time during the study and your decision to withdraw from the study does not and will not impact your involvement in the program. Should you wish to withdraw, please email the research team to let them know you wish to discontinue with the research aspect of the program. Any data collected can be eliminated from the research up to the last week of the study.

Purpose of the Study

Past research indicates that an estimated 5 - 10 % of the population has an ADHD diagnosis. Many of these individuals enter post-secondary education, although frequently struggle with the demands of university courses. Adults with ADHD often have difficulty sustaining attention, retaining information, utilizing appropriate organization skills, and engaging in

appropriate with social interactions with peers and professors. Thus, it is not surprising that students with ADHD are prone to struggle both academically and socially, leaving them particularly vulnerable to academic under-performance. The purpose of this study is to provide first year undergraduate students with ADHD the tools and resources to minimize stress, failure and/or withdrawal from university and optimize success in the post-secondary environment.

What Will I Be Asked To Do?

Participants will be asked to complete a number of measures designed to gain an understanding of participants' demographics, ADHD symptoms, sense of belonging, and coping within the college environment. Only the sense of belonging and coping within the college environment measures will be administered twice: once at the beginning of the program and a second time approximately 6-8 weeks later, following conclusion of the program.

What Type of Personal Information Will Be Collected

Participants who agree to participate will be asked to provide gender, age, year of study, and an email address to allow contact between the researchers and participants.

Are there Risks or Benefits if I Participate?

The risks to participation in this study are minimal. It is possible that you may feel slightly uncomfortable completing some of the questions, but you do not have to complete any questions that you do not want to answer. The benefits to participation include gaining a greater understanding of how the ADHD Skills program may support your learning, as well as providing valuable information to inform program evaluation and planning for future undergraduate students with ADHD.

What Happens to the Information I Provide?

Participation in this study is completely voluntary and confidential. No one except the researchers and supervisor will be allowed to see any specific results and only group information will be summarized for any presentation or publication of results. All materials will be stored in a locked cabinet in a locked facility by one of the researchers or the research supervisor, Dr. Emma Climie. Data will be entered onto a password protected computer without your name attached, and thus all electronic files will remain anonymous.

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

Laura Gordon, School and Applied Child Psychology

Supervisor: Dr. Emma Climie, Ph.D., R. Psych.

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) 220-6289/220-4283; 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.