

# Practicing Teachers' Attributions for the Behaviour of Students With Learning Disabilities and Attention-Deficit/Hyperactivity Disorder

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*More students with attention-deficit/hyperactivity disorder (ADHD) and learning disabilities (LD) are being taught within the regular education classroom than ever before even though children with these disorders often require additional educational supports. Therefore, it is critical that teachers understand the challenges experienced by these students, as well as feel efficacious when it comes to teaching and supporting them. Attribution theory is a widely used theoretical framework by which to explain teachers' cognitions. We surveyed 151 practicing teachers and asked them to respond to items related to attributions for students' behaviour and their teaching self-efficacy. First, we examined teachers' perceptions of the primary cause of the difficulties experienced by students qualitatively. We open-coded responses and three major themes emerged: biology/genetics, the environment, and skill deficits. These themes differed somewhat depending on whether the student had ADHD or LD. Second, we examined the relationship between teachers' attributions for student behaviours and their sense of teaching self-efficacy quantitatively. For students with ADHD, controllable attributions predicted teachers' self-efficacy ( $\beta = .30, p = .005$ ). For students with LD, controllable and internal attributions predicted teacher self-efficacy ( $\beta = .34, p = .001, \beta = .24, p = .009$ , respectively). Third, we examined the results of both analyses simultaneously to determine areas of convergence and divergence with respect to attribution theory. The results have implications for both teachers and students (e.g., attributional interventions designed to foster a sense of self-efficacy), as well as provide directions for future research and teacher training.*

*Le nombre d'élèves atteints du trouble du déficit de l'attention avec ou sans hyperactivité (TDAH) ou des troubles d'apprentissage (TA) sont intégrés plus que jamais aux classes ordinaires, même si les enfants affectés par ce type de difficultés ont souvent besoin d'un soutien éducationnel supplémentaire. Il est donc critique que les enseignants comprennent les défis que vivent ces élèves et que les enseignants se sentent efficaces dans l'enseignement et l'appui qu'ils leur apportent. La théorie attributive est un cadre théorique dont l'emploi est répandu pour expliquer les cognitions des enseignants. Au cours d'une enquête auprès de 151 enseignants en exercice, nous les avons interrogés au sujet des attributions relatives au comportement des élèves et de leur sentiment d'efficacité personnelle en enseignement. Nous avons d'abord étudié, qualitativement, les perceptions des enseignants quant à la première cause des difficultés que vivent les élèves. Trois thèmes majeurs se sont dégagés des réponses aux questions ouvertes : la biologie/la génétique, l'environnement et des lacunes sur le plan des habiletés. Ces thèmes variaient quelque peu selon que l'élève était atteint du TDAH ou des TA. Deuxièmement, nous avons étudié, quantitativement,*

*le rapport entre les attributions des enseignants relatives au comportement des élèves et leur sentiment d'efficacité personnelle en enseignement. Par rapport aux élèves atteints du TDAH, les attributions contrôlables étaient prédictives du sentiment d'efficacité personnelle chez les enseignants ( $\beta = .30, p = .005$ ). Relativement aux élèves atteints des TA, les attributions contrôlables et internes étaient prédictives du sentiment d'efficacité personnelle chez les enseignants ( $\beta = .34, p = .001, \beta = .24, p = .009$ , respectivement). En troisième lieu, nous avons étudié les résultats des deux analyses simultanément afin de déterminer les points de convergence et de divergence par rapport à la théorie attributive. Les résultats ont des retombées tant pour les enseignants que les élèves (par ex. des interventions attributionnelles conçues pour favoriser un sentiment d'efficacité personnelle) et ils proposent de nouvelles orientations en matière de recherche et formation des enseignants.*

Attention deficit/hyperactivity Disorder (ADHD) and learning disabilities (LD) are two neurodevelopmental disorders that comprise the largest groups of students who require special educational supports (American Psychiatric Association [APA], 2013). These students can present with a number of learning and behavioural difficulties in the classroom (APA, 2013; Mash & Wolfe, 2012), making the school setting challenging for both them and their teachers. This population of students is critical to understand, given that nearly half of students with a diagnosis of ADHD also present with a learning disability (DuPaul, Gormley, & Laracy, 2013). Considering the high comorbidity (DuPaul et al., 2013) and the multitude of challenges they are likely to face in the classroom, it is critical that children with ADHD and LD feel supported and enabled for success in the classroom setting—a responsibility that largely rests on classroom teachers.

According to attribution theory (Weiner, 1985), the way an individual thinks about the cause of an event will influence their subsequent feelings and behaviours. For example, when faced with a student's challenging behaviour, a teacher who thinks, or makes an attribution that the behaviour is controllable may respond differently than a teacher who does not. One of the most important teacher cognitions is efficacy, and attributions may help explain teachers' sense of self-efficacy (Andreou & Rapti, 2010). Self-efficacy (Tschannen-Moran, Hoy, & Hoy, 1998) refers to the perceived capability of accomplishing goals and eliciting positive change. In educational contexts, self-efficacy has been associated with several benefits for both students and teachers, particularly children who require additional attention and support in the classroom (Klassen, Tze, Betts, & Gordon, 2011; Ryan, Kuusinen, & Bedoya-Skoog, 2015). Despite the established link between teachers' cognitions and behaviours, and the critical need for efficacious teachers working with students with ADHD and LD, little research has focused on teachers' self-efficacy for working with this population of students. Therefore, the goal of the current study was to examine teachers' understanding of the cause of the challenges faced by students with ADHD and LD, and how these causes relate to their sense of self-efficacy, all within the framework of attribution theory.

### **ADHD and LD in the Classroom**

ADHD is a common neurodevelopmental disorder, impacting nearly 10% of children (Blumberg et al., 2012). ADHD is characterized by high levels of inattention, hyperactivity/impulsivity, or both, that interfere with functioning in multiple domains (e.g., school, home). The classroom setting is particularly challenging for students with ADHD, as they often have academic gaps relative to their peers, struggle to meet classroom expectations (e.g., staying seated, following

instructions), have difficulty staying on task or engaged, are often disruptive, and experience social difficulties (APA, 2013; Sattler, 2014; Steiner, Sheldrick, Frenette, Rene, & Perrin, 2014).

LDs are likewise neurodevelopmental disorders that are characterized by “persistent difficulties learning keystone academic skills, with onset during the years of formal schooling” (APA, 2013, p. 68). Furthermore, professionals in the field have identified specific cognitive processing deficits (e.g., processing speed, working memory, visuospatial skills), that can make it difficult for children to learn foundational academic skills in a given area, regardless of whether they have a diagnosed LD (Breux et al., 2017). For example, processing speed is important for automatic math calculations (e.g., addition, subtraction). It is currently estimated that LDs impact 3.2% of Canadian children (Statistics Canada, 2009). This disorder can result in substantial challenges in the areas of reading (e.g., decoding, comprehension), writing (e.g., spelling), mathematics (e.g., calculation), and spoken language (Cortiella & Horowitz, 2014). In the classroom, students with LD often achieve poor grades, have high dropout rates, struggle to focus, and experience social and behaviour difficulties (APA, 2013; Cortiella & Horowitz, 2014).

North American classrooms are becoming more inclusive than ever before. In the United States, as a result of the Individual with Disabilities Education Improvement Act (IDEIA) and No Child Left Behind (NCLB), regular classroom teachers are becoming increasingly responsible for these students (Schultz & Simpson, 2013). In Alberta, Canada, the goal is to include as many students with exceptional needs as possible in the regular education classroom with their typically developing peers (Alberta Teachers Association, 2014). Therefore, it is important that teachers not only understand the challenges that these students face, but also feel efficacious in supporting their learning (Brady & Woolfson, 2008). Unfortunately, regular education teachers often report feeling unprepared to work with students who require specialized support or attention (Reinke, Stormont, Herman, Puri, & Goel, 2011; Stoughton, 2007).

### **Teachers’ Sense of Self-Efficacy**

One construct that is helpful when considering teachers’ perceived level of preparedness for working with challenging students is their sense of self-efficacy (Tschannen-Moran et al., 1998). Teacher self-efficacy is a teacher’s perceived ability to successfully accomplish teaching related tasks (Brady & Woolfson, 2008; Tschannen-Moran et al., 1998). Researchers have suggested that teacher self-efficacy is context specific (Brady & Woolfson, 2008), and therefore, can vary based on the types of students within in the classroom.

Over the years, teacher self-efficacy has been extensively studied, and various positive outcomes have been identified for teachers with relatively higher levels of efficacy (Klassen & Chiu, 2010) and typically developing students (Brady & Woolfson, 2008; Ross, 1992). Teachers’ sense of self-efficacy is often related to greater job satisfaction, reduced stress, greater performance, lower levels of burnout, and overall well-being (Klassen & Chiu, 2010; Klassen & Tze, 2014; Wang, Hall, & Rahimi, 2015). Efficacious teachers also employ better instructional strategies, display effective classroom management skills (e.g., managing disruptive behaviour), and provide various instructional and emotional supports to their students (Abu-Tineh, Khasawneh, & Khalailah, 2011; Allinder, 1994, 1995; Andreou & Rapti, 2010; Ryan et al., 2015). Perhaps most importantly, efficacious teachers are likely to be more patient and persistent when working with diverse students (Gibson & Dembo, 1984), which is critical given the increased needs of students with ADHD and LD. Although teachers with special education training often have higher levels of self-efficacy and have more favourable attitudes towards inclusive education

(Levi, Einav, Raskind, Ziv, & Margalit, 2013; Warshaw, 2012), this specialized training is not the norm in pre-service programs. Indeed, pre-service teachers report being largely unaware of appropriate classroom management strategies for students with ADHD (Poznanski, Hart, & Cramer, 2018) or LDs (Dybdahl & Ryan, 2009) before entering their first teaching job. Therefore, we need to ensure that all teachers feel efficacious to work with all students.

## **Theoretical Framework**

Attribution theory provides a conceptual framework for examining teacher self-efficacy (Brady & Woolfson, 2008). The theory examines casual attributions (i.e., explanations) individuals make for situational outcomes and the impact they have on cognitions, emotions, and future behaviour. According to Weiner (1985), all attributions for an outcome can be classified along three dimensions: locus of causality, stability, and controllability (Brady & Woolfson, 2008; Schultz & Simpson, 2013). The locus dimension refers to the individual's perception of the location of a cause as either internal or external to oneself (Graham & Taylor, 2016). The stability dimension refers to how stable or unstable over time a cause is perceived to be (Weiner 2014). Finally, the controllability dimension refers to whether a person perceives they have influence over the cause of the outcome. Once attributions have been made for an outcome, various cognitive, emotional, and behavioural consequences can occur (Schultz & Simpson, 2013; Weiner, 1985). Furthermore, Weiner posited that the actual cause of an event is less influential than the perceived cause. This is important for working with students with ADHD and LD, as the cause of the disorder is known to be neurodevelopmental, however there may be countless reasons why an individual student is struggling in the classroom. Typically, controllable and unstable attributions for negative events are considered adaptive (Perry, Stupnisky, Hall, Chipperfield, & Weiner, 2010), because they suggest that these outcomes can change in the future with sufficient effort.

**Teachers' attributions.** Theory would predict that teachers' attributions for student behaviour will subsequently have an impact on their own behaviour in the classroom (Weiner, 1985, 2010), such as their willingness to make accommodations, provide interventions, punish, and their patience. For example, if a teacher sees a student's difficulties as stable, and unlikely to change, they might feel pity toward this student and hold lower expectations in the future (Brady & Woolfson, 2008). This in turn would influence their behaviour toward that student, as they might invest less time due to not expecting the student to succeed. In fact, this has been corroborated in previous research among teachers of students with ADHD and LD. Clark (1997) found that teachers viewed LD as internal, stable, and uncontrollable, and as a result, experienced lower anger, higher sympathy, and held lower academic expectations, and higher expectations of future failure. Furthermore, research by Woodcock and Vialle, (2010) found that teachers' emotions and behaviours also differed based on the attribution made for student behaviour and disability status. Ohan, Visser, Strain, and Allen (2011) found that vignettes with diagnostic labels were associated with perceptions of greater child impairment, negative emotions (e.g., stress), and less confidence in working with the student, but also increased their willingness to provide interventions. Although they did not assess attributions explicitly, diagnostic labels could be classified as stable and internal, which lends support to the link between attributions and resulting emotions and behaviours towards students. Despite the demonstrated importance of teachers' attributions for student behaviour, limited research has examined the association between attributions and self-efficacy, a critical cognitive outcome in the education literature and precursor to behaviour, when it comes to working with students with ADHD or LD.

**Attributions and self-efficacy.** To date, few studies have examined the relationship between attributions for student difficulties and their sense of self-efficacy. One study conducted by Andreou and Rapti (2010) found that increasing levels of self-efficacy were associated with a greater likelihood of attributing difficulties to school factors, whereas low levels of self-efficacy were related to familial attributions. Therefore, attributions that were seen as controllable by the teachers were associated with greater perceived hope in helping struggling students. Similarly, Atkinson (2012) examined pre-service teachers' attributions for the behaviour of students with Fetal Alcohol Spectrum Disorder and found that externally controllable and unstable attributions were associated with higher levels of self-efficacy (Atkinson, 2012). It follows from this literature that unstable and controllable (by the teacher) attributions for student behaviour would predict adaptive outcomes among teachers (e.g., self-efficacy). However, no research to date has examined the relationship between teachers' attributions and their sense of self-efficacy for working with children with ADHD and LD.

### **Current Study and Context of Inclusion**

Many children with diagnoses of ADHD and LD experience difficulties at school (DuPaul et al., 2013), and most are included in the regular classroom (Alberta Teachers Association, 2014). Indeed, the focus of inclusion in Alberta is widespread, describing "an attitude and approach that embraces diversity and learner differences and promotes equal opportunities for all learners in Alberta" (Alberta Education, n.d.). Although this presents a promising outlook for inclusion, the realities are increasing size and complexity of classrooms, and a declining satisfaction with supports and resources available to teachers (Alberta Teachers Association, 2015). This can pose challenges for the implementation of inclusion. A first step is helping teachers feel efficacious when it comes to implementing inclusion within their classroom, which involves working with diverse students.

The purpose of the current research was to increase our understanding of Alberta teachers' attributions for the behaviours of students with ADHD and LD and assess how these attributions relate to self-efficacy. We asked three specific research questions. First, what are teachers' perceptions of the primary cause of the difficulties experienced by students with LD and ADHD (qualitatively)? Second, what is the relationship between teachers' attributions for student behaviours and their sense of self-efficacy (quantitatively)? Third, how do the results from the previous two research questions converge and diverge with respect to attribution theory? An understanding of attributions in relation to teacher self-efficacy may help to ensure that students with ADHD and LD are properly supported in the classroom and enable their success in the school setting.

### **Method**

We used a convergent mixed method design (Creswell & Plano Clark, 2011) to answer our research questions. The qualitative and quantitative data were collected concurrently, and all participants engaged in both strands of the research. Each type of data was analyzed separately and then intentionally integrated (Onwuegbuzie, Leech, & Collins, 2011) to reveal mixed inferences related to convergence and divergence of results from each type of data. In the mixing, quantitative results were prioritized and used to anchor the qualitative responses.

## **Participants and Procedure**

Data were collected from a convenience sample of practicing teachers ( $n = 151$ ) attending a two-day mandatory teacher convention in Edmonton, Alberta, Canada. Participants were asked to complete a 10-minute questionnaire onsite. The questionnaire consisted of 75 questions, of which a portion of the data is presented here. Specific to this project, participants provided demographic information and answered questions related to self-efficacy and attributions for student behaviour. The sample was predominately female (77%) and of Caucasian (75%) background. Teachers ranged in age from 22 to 65 ( $M = 35.18$ ), and identified as having a range of years of teaching experience (1 to 41,  $M = 9.26$ ). In 2014, 71% of individuals working within the education service industry for the province were women, and 75% were between the ages of 25 and 54 (Government of Alberta, 2015), suggesting a representative sample. Furthermore, teachers were distributed relatively equally in terms of primary versus secondary school (55% and 45% respectively).

Ethics approval was obtained from the Human Ethics Research Office at the researchers' university. When a teacher agreed to complete the survey, they were provided with a clipboard and a one-page double-sided questionnaire. Information letters were available to participants upon request. Participants were free to discontinue completing the survey at any time. Consent was implied by completing the questionnaire. As a token of appreciation, participants were offered candy at the recruitment table and entered into a gift-card draw.

## **Measures**

**Demographics.** Five demographic variables were collected for all participants: age, gender, ethnicity, number of years teaching, and teaching level (primary or secondary). We used these variables to describe the sample and as control variables in the regressions.

**Primary Cause.** Participants were asked to respond in writing to two open-ended questions. First, "What do you believe is the primary cause of the difficulties experienced by students with Attention Deficit Hyperactivity Disorder (ADHD)?" Second, "What do you believe is the primary cause of the difficulties experienced by students with Learning Disabilities (LD)?"

**Causal Attributions.** To assess the causal attributions made by teachers, we utilized single items for each of the three dimensions. Items were presented on a scale from 1 (*not at all*) to 9 (*very much so*) with the stem "When thinking about a student with [ADHD/LD] in your class ..." For locus of causality, the item was: "To what extent do you feel the student's diagnosis is a part of them? Lower scores on this item indicated more external attributions. Stability was assessed with the item: "To what extent do you feel the student can change their difficulties? Lower scores indicated more stable attributions compared to higher scores. For controllability, teachers were asked: "To what extent do you feel the student can control their difficulties? Lower scores indicated more uncontrollable (by the student) attribution, compared to higher scores, which indicated a more controllable attribution. Attributions were investigated separately for students with ADHD and LD.

**Self-Efficacy.** Self-efficacy was measured using the Teachers' Sense of Self-Efficacy Scale (TSES; Tschannen-Moran & Hoy, 2001). Due to time constraints, one item was asked from each of the TSES factors (instructional strategies, classroom management, and student engagement), which has been done in previous research (Klassen & Durksen, 2014). Teachers were asked: "Please indicate your opinion about each of the statements below remembering there are no right

answers. Write the number 1 (*nothing*) to 9 (*a great deal*) that best reflects your opinion.” Our questions related to self-efficacy were separated for ADHD and LD, therefore each item was presented twice, similar to above. The three items presented to teachers were: (1) How much can you do to implement effective instructional strategies? (2) How much can you do to manage student behaviour? (3) How much can you do to get students to effectively assess student learning?

### **Rationale for Analysis**

We conducted our analyses in three stages. First, we examined teachers’ perceptions of the primary cause of the difficulties experienced by students with LD and ADHD as provided in the qualitative section of the survey. We used an inductive analysis procedure (Thomas, 2006) to explicitly look for themes in teachers’ responses. This allowed us to answer the first research question. Second, we examined teachers’ attributions for student behaviours and their sense of self-efficacy. This allowed us to answer the second research question. We ran paired-sample *t*-tests to determine differences between teachers’ perceptions for the difficulties of students with ADHD and LD along the three causal dimensions. Furthermore, we ran a two-step multiple linear regression analysis to examine if the three causal dimensions predicted teacher self-efficacy. Third, we examined the results of the quantitative and qualitative analyses simultaneously looking for places of convergence to answer our third research question.

## **Results**

### **Primary Causes of the Difficulties Experienced**

First, the first and second authors open-coded the responses to the prompt for students with LDs. In total, 151 teachers responded to our survey, however, 28 did not respond to this prompt and 15 did not provide a response that was specific enough to code (e.g., “management,” “understanding”) and were excluded from analyses. This left us with 108 responses to interpret. The first and second authors first coded separately, and then compared themes and codes for each response. When discrepancies arose, they were resolved through discussion, and when necessary, a third coder was consulted until agreement for all codes reached 100%. This process resulted in a total of eight themes (see Table 1 for themes and sample quotes). In descending order of frequency of mention, the themes were: (a) environment including home and school, (b) genetics or biological, (c) skills including a variety of skills that students did not possess or had difficulty with, (d) teaching, (e) support within the school and home (f) neurological—separate from biological reasons because the responses dealt directly with brain functioning, (g) personal characteristics, and (h) diagnosis.

Next, the first and second authors open-coded the responses to the prompt for students with ADHD. In total, 151 teachers responded to our survey, however similar to above, 18 did not respond to the prompt, and 19 did not provide a response that was specific enough to code and therefore, were excluded from analyses. A similar process for coding and resulting discrepancies was used as outlined above. This left us with 114 responses to interpret (see Table 2 for themes and sample quotes). Overall, 11 themes emerged. Of these, seven themes overlapped with the response for students with LD. These themes include: (a) skills, (b) genetics or biological (c) environment, (d) neurological, (e) teaching (f) diagnosis, and (h) support. Four new themes

emerged that were unique to difficulties for children with ADHD: (i) movement, (j) lifestyle including diet and sleep, (j) technology, and (k) parenting.

Table 1

*Causes Identified for Students With LD*

Category	%	Examples	Controllability	Locus
Environment	22	"Class size and composition" "Parenting"	Uncontrollable	External
Genetics/ Biological	21	"Born with it" "Genetics" "Biological" "Family genetics"	Uncontrollable	Internal
Skills	20	"Poor reading skills" "Lack of knowledge to build foundational skills" "Difficult putting pieces of learning or information together"	Controllable	Internal
Teaching	18	"Lack of differentiated learning" "Lack of training of teachers [and] staff" "inability for teachers to totally meet their needs" "Not sufficient adaptations/modification"	Uncontrollable	External
Support	14	"Lack of support at home" "Not enough help in the classroom" "Not enough support" "Appropriate supports"	Uncontrollable	External
Neurological	9	"Brain/neuro connections" "Brain wiring" "Brain development"	Uncontrollable	Internal
Personal Characteristics	6	"Frustration, not wanting to be different" "Feeling of helplessness" "Self-consciousness"	Controllable	Internal
Diagnosis	6	"Lack of diagnosis" "Not characterized early enough—flying under the radar"	Uncontrollable	Internal

*Note.* Since only controllability (by the student) and locus were significantly related to teachers' sense of self-efficacy, they are the only causal dimensions reported.

Table 2

*Causes Identified for Students With ADHD*

Category	%	Examples	Controllability
Skills	25	"Can't filter out stimulation" "Focus issues" "Distractibility"	Controllable
Genetics/ Biological	14	"Born with it" "Genetics" "Biological"	Uncontrollable
Environment	14	"Classroom set up" "Noises in class" "High regulated classroom"	Uncontrollable
Movement	12	"Being able to move or not move in the classroom" "Sitting too long" "Lack of movement"	Uncontrollable
Neurological	11	"Chemical imbalance" "Over active neuron firing" "Brain development"	Uncontrollable
Lifestyle	10	"Lack of proper nutrition" "Lack of sleep"	Controllable
Teaching	9	"Lack of accommodation" "Lack of differentiation in instructions" "Lack of focusing strategies and teaching methods"	Uncontrollable
Technology	6	"Technology at home" "Too much focus on using technology for the wrong reasons" "Too much screen time"	Uncontrollable
Diagnosis	6	"Not being identified" "Under-diagnosed"	Uncontrollable
Parenting	5	"Lack of parenting" "Permissive parenting" "Bad parenting"	Uncontrollable
Support	4	"Not enough support—EA staff" "Lack of support"	Uncontrollable

*Note.* Since only controllability (by the student) was related to teachers' sense of self-efficacy, this is the only causal dimensions reported.



## Quantitative Findings

Descriptive statistics for the quantitative variables can be found in Table 3. We ran three paired-samples *t*-tests, with a Bonferroni correction ( $p = .017$ ) to examine differences in teachers' attributions for difficulties associated with ADHD and LD. There was a significant difference for stability, as teachers reported higher scores for students with LD than students with ADHD,  $t(150) = 2.59, p = .01$ , Cohen's  $d = 0.23$ . This suggests that teachers believe students with LD are more able to change their difficulties (i.e., the problems are less stable), compared to students with ADHD. There were no significant differences for controllability or locus of causality.

Correlation analyses revealed several relationships between attributions and teacher self-efficacy (see Table 4). When reporting on students with ADHD, there was a significant positive correlation between teacher self-efficacy ( $\alpha = .76$ ) and the attributions of controllability ( $r = .22, p < .01$ ) and stability ( $r = .20, p = .02$ ). When reporting on students with LD, the only significant correlation was between self-efficacy ( $\alpha = .74$ ) and controllability ( $r = .23, p < 0.01$ ), as teachers who believed that students can control their difficulties reported greater teaching self-efficacy.

Next, two separate linear regressions were performed with variables entered in two steps (see Table 5). We examined the data to ensure that assumptions for running regressions (i.e., normality, multicollinearity) were met. The first regression examined attributions as predictors of teacher self-efficacy in relation to students with LD. Step 1 of the regression included gender, age, teaching level, and years of experience as predictors and produced no significant results. In Step 2, controllability and locus of causality emerged as significantly related to teacher self-efficacy ( $\beta = .34, p = .001$  and  $\beta = -.24, p = .009$ , respectively), and in total the model explained 13.9% of the variance  $F(7, 125) = 2.71, p = .01$ . The second regression examined the same variables but in relation to students with ADHD. Similar to above, none of the variables entered in Step 1 were significant. In Step 2 of the regression, the attribution items were included, and overall the model explained 12.7% of the variance  $F(7, 127) = 2.50, p = .02$ . However, only controllability emerged as significantly related to teacher self-efficacy ( $\beta = .30, p = .005$ ).

Table 3

### *Descriptive Statistics of Study Variables*

Variable	N	Mean	SD	Range
Gender (1 = male, 2 = female)	149	1.27	-	1-2
Age	144	35.18	10.44	22-65
Teaching Level (1 = primary, 2 = secondary)	151	1.45	-	1-2
Years	137	9.26	9.07	0-41
Self-Efficacy (LD)	141	7.17	1.30	2-9
Locus (LD)	149	5.01	2.39	1-9
Controllability (LD)	150	4.69	2.07	1-9
Stability (LD)	150	5.69	2.07	1-9
Self-Efficacy (ADHD)	142	6.69	1.35	2-9
Locus (ADHD)	151	5.35	2.26	1-9
Controllability (ADHD)	151	4.53	1.91	1-9
Stability (ADHD)	151	5.21	2.03	1-9

Table 4

*Correlations for LD Variables (Above) and ADHD Variables (Below)*

	1	2	3	4
1. Locus	-	.316***	.304***	-.128
2. Stability	.196*0	-	.462***	.140
3. Controllability	.223**	.442	-	.234**
4. Self-Efficacy	-.007	.196*	.223**	-

Note. \*p < .05, \*\* p < .01, \*\*\* p < .001

Table 5

*Standardized Beta Weights From Regression Analyses*

Predictor Variable	Self-Efficacy			
	Students with LD		Students with ADHD	
	Step 1	Step 2	Step 1	Step 2
1. Gender	-.070	-.144	-.066	-.111
2. Age	-.096	-.052	-.071	.072
3. Teaching level	-.021	-.104	-.075	-.189
4. Years of Experience	.060	.058	.069	-.027
5. Locus	-	-.242*	-	-.086
6. Stability	-	.046	-	.137
7. Controllability	-	.341**	-	.296**
<i>R</i> <sup>2</sup>	.008	.139**	.012	.127**

Note. \*p < .05, \*\* p < .01

### Points of Divergence and Convergence in the Findings Above

In order to answer the third research question, we crossed the results of the qualitative and quantitative data and presented these results in a joint display (Onwuegbuzie et al., 2011; see Figures 1 and 2). Specifically, each qualitative theme was classified along the statistically significant causal dimensions from the quantitative results. Overall, there were areas of convergence and divergence for both students with ADHD and LD.

For students with LDs, the regression analyses showed that internal causes were associated with lower levels of self-efficacy, and controllable causes were associated with higher levels of self-efficacy. This suggests that perceiving students' difficulties as something external to them but also something they can control is likely to foster the greatest sense of self-efficacy among teachers. Interestingly, the most commonly reported theme for the cause of the difficulties experienced by students with LDs was the environment. Although the qualitative reason was never directly linked to attribution dimensions in this study, arguably the environment would be considered external and uncontrollable. The external part of this cause would be associated with increased efficacy whereas the uncontrollable consideration would be negatively associated with teachers' sense of

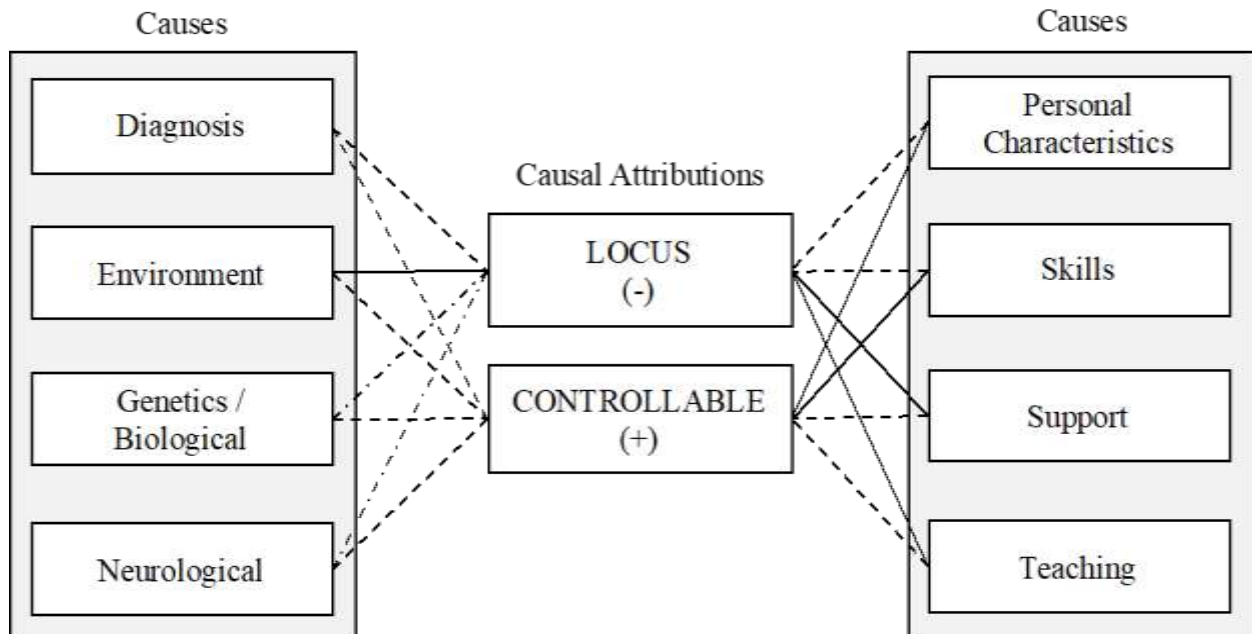


Figure 1. Joint display for LD. Solid lines represent external and controllable causes and dotted lines represent internal and uncontrollable causes.

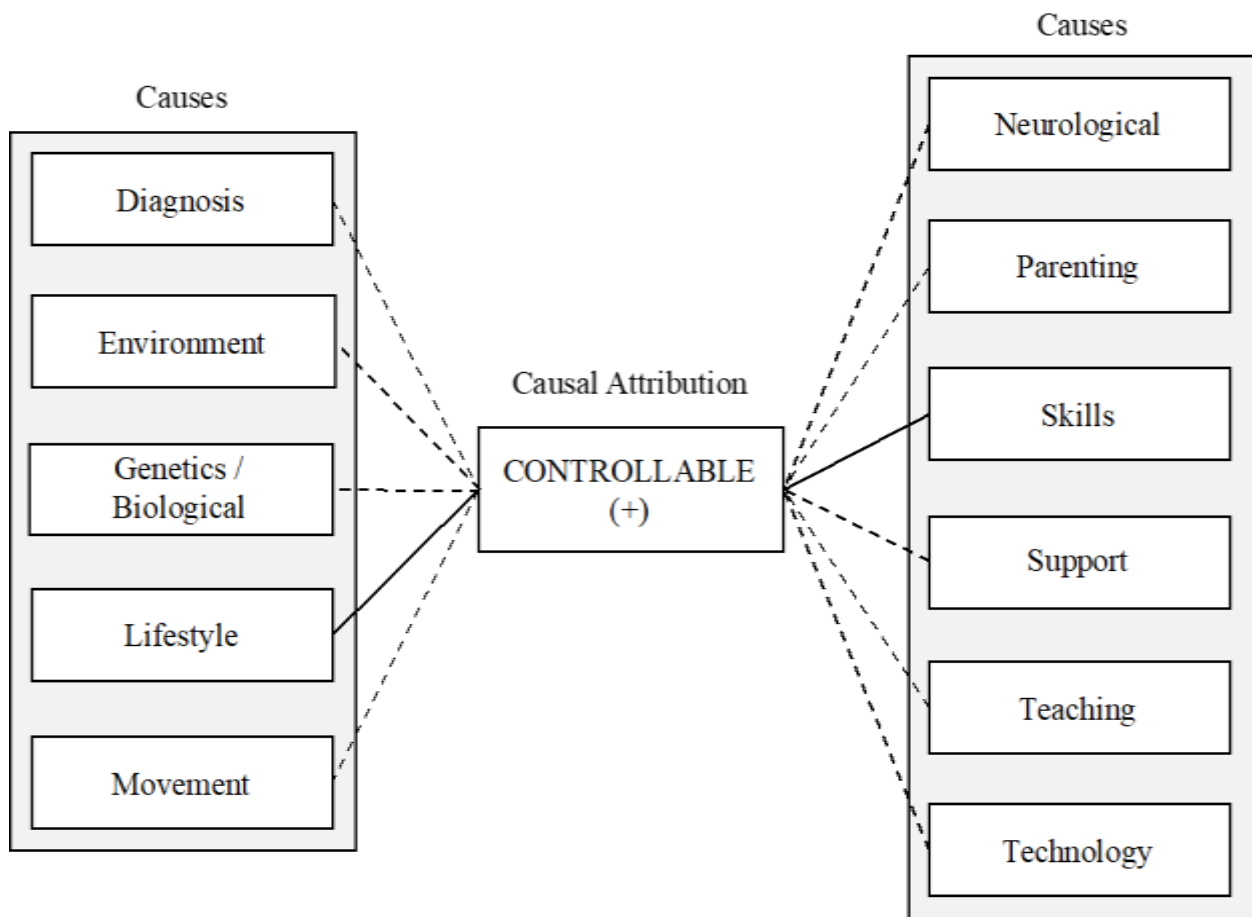


Figure 2. Joint display for ADHD. Solid lines represent controllable causes and dotted lines represent uncontrollable causes.

efficacy. Despite the fact that the environment is not controllable by the student, it is to some extent controllable by the teacher. It is outside the scope of the current study to speak to the relationship between controllability (by the teacher) and self-efficacy. However, environmental causes may be at least moderately adaptive based on the relationship between external attributions and self-efficacy. Genetics and biology were listed by 21% of teachers, which would be described as internal and uncontrollable. Thus, although teachers focused on these explanations for students' difficulties quite regularly, the reasons are unlikely to make teachers feel well-equipped to support students. Furthermore, of all eight themes derived from teachers' responses, only two would be classified as controllable by the student (i.e., skills and personality characteristics). Overall, what teachers report as the primary cause of student difficulties does not align with the attributional dimensions that would positively be associated with their self-efficacy. According to our results, focusing on skills as the cause of student difficulty is likely to elicit greater feelings of self-efficacy as skills are controllable and external, yet only 20% of our sample is doing so.

With respect to students with ADHD, controllable explanations for student difficulties were related to higher levels of self-efficacy. Interestingly, skills was the most frequently reported cause, which would also be described as controllable, and likely to be associated with more efficacious teachers. However, the next four themes identified (i.e., genetics/biology, environment, movement, neurological) would all be described as uncontrollable. Furthermore, of the eleven themes derived from teacher responses, only one other theme would be described as controllable—namely lifestyle—and this was only mentioned by 10% of teachers. Thus, similar to responses provided for students with LD, the majority of causes reported by teachers for students with ADHD do not converge with the types of attribution that quantitatively support feelings of self-efficacy.

## **Discussion**

The purpose of this research was to examine teachers' attributions for the difficulties of students with ADHD and LD, and whether attributions relate to their sense of self-efficacy. Our findings provide insight into teachers' perspectives about the causes of difficulties experienced by these students. Furthermore, we highlight the connection between teachers' attributions for students' difficulties and teacher self-efficacy. We discuss these findings in more detail below, as well as present the limitations of the study, directions for future research, and implications for both researchers and practitioners.

### **Perceived Causes for Student Difficulties**

An analysis of the open-ended responses revealed that teachers have a wide range of beliefs regarding what causes children with ADHD and LD to struggle in the classroom. Some of the common and overlapping themes included: skills, genetic/biological, the environment, and teaching. It seems that the perceived causes of difficulties are almost as numerous as the children themselves. In other words, it may be a highly individualized way in which teachers select a primary cause for students in general or a student specifically. Indeed, future research may want to distinguish teachers' causes "in general" from those derived when thinking about a specific student. It would also be beneficial to know how much education teachers received about these common childhood disorders during their training programs or professional development.

Perhaps more importantly, we need to know if teachers learned about the problems as “caused” by anything other than the labeled disorder. The variety of causes provided paired with previous findings that teachers often feel unprepared to support students with both ADHD (Poznanski et al., 2018) and LD (Dybdahl & Ryan, 2009), suggest that they may not have received sufficient information on what causes these students to struggle in the first place, never mind how to best support them.

Teachers believe students with LD have less stable causes for their difficulties compared to students with ADHD. Previous research has found that teachers know more about ADHD characteristics than they do about treatments (Sciutto, Terjesen, & Frank, 2000; West, Taylor, Houghton, & Hudyma, 2005). West and colleagues (2005) found that when it came to questions about treatments for ADHD, there was a higher proportion of “don’t know” responses than responses to causes and characteristics items. A lack of knowledge about treatments could be associated with perceiving ADHD as more stable. Furthermore, approaches to assisting students with LD that change their behaviour are widespread on the internet (e.g., Mather & Goldstein, 2001), and therefore the behaviour of students with LD might be seen as more malleable as a result. This speaks to the importance of training that is provided to teachers for supporting diverse learners in their classrooms.

### **Attributions as Predictors of Self-Efficacy**

Controllability emerged as an important positive predictor of self-efficacy for both kinds of students (i.e., with ADHD or with LD). This highlights how a perception that students can control their difficulties may be adaptive for teachers’ self-efficacy as it pertains to working with students with ADHD and LD. From a theoretical perspective, controllable attributions are typically considered adaptive because they suggest that effort can result in improvement. Thus, it makes sense that when teachers think students can control their difficulties, they personally feel efficacious to help students exert control and achieve success (e.g., stay on task, follow instructions). Interestingly, multiple studies have found that uncontrollable attributions (by the student) were associated with teacher self-efficacy (Andreou & Rapti, 2010; Atkinson, 2012). Furthermore, controllable attributions are typically associated with the emotion of anger (e.g., Graham & Taylor, 2014), and unstable attributions are typically associated with positive outcomes (Atkinson, 2012; Weiner, 2010), such as the emotion of hope, which is related to self-efficacy (Sezgin & Erdogan, 2015). It is possible that teachers view disorders as stable and were responding as such, or perhaps there was not enough variability in scores to observe a significant relationship.

Nevertheless, a substantial proportion of the variance was unaccounted for in our regression analyses, and we are left to speculate as to why that might be. One speculation is the potential role of teacher characteristics. For example, Woolfson, Grant, and Campbell (2007) determined that there were differences in attributions based on where the teacher was from (i.e., mainstream or special school). They determined that teachers who worked in a mainstream setting viewed students with special needs as having less control over their performance compared to students without special needs, whereas those teachers from special schools saw students more equally. Furthermore, Levi and colleagues (2013) found that personal resources (e.g., coping mechanisms, flexibility) and hope predicted high levels of self-efficacy. These findings suggest that unique teacher characteristics may differentially predict levels of self-efficacy, regardless of attributions made for student behaviour. Furthermore, they highlight the importance of experience and training that is required for working with diverse students.

## **Convergence/Divergence of Quantitative and Qualitative Results**

From the quantitative perspective, teachers feel more efficacious when they view the difficulties of their students as controllable and external. Unfortunately, from the qualitative data, teachers rarely provided causes that would be described as external and controllable (by the student) spontaneously. This may help explain why many teachers feel underprepared or inefficacious when working with students LD or ADHD in their classrooms (Dybdahl & Ryan, 2009; Poznanski et al., 2018). According to our findings, the majority of causes listed by teachers would not be classified as those that would support self-efficacy beliefs. For example, focusing on elements such as genetics and biology, the second most common theme for each group, has at best no impact on their efficacy. Until teachers spontaneously attribute students' difficulties to controllable causes they will unfortunately not be contributing to their own sense of efficacy.

One option to help teachers adjust their attributions is to provide additional training not only about the disorders but about what things are controllable within the disorder. Training and education can focus on identifying causes that are viewed as external or controllable by the student and thereby more likely to advance teachers' efficacy. Of course, control is not limited to the student. In the current research we only asked quantitative questions pertaining to controllable by the student, yet many causes could be considered controllable by the teacher and by extension help support their feelings of efficacy (e.g., Andreou and Rapti, 2010). Indeed, multiple themes from the qualitative data may be classified as controllable by the teacher (e.g., environment, teaching, support). Although the results we obtained from the regression analyses illustrate that student controllability is important, previous research would suggest that teacher controllability may be adaptive as well. However, this was not measured in the current study and could be added to future research in this area.

## **Limitations and Directions for Future Research**

Despite the important contributions of the current findings, there are limitations that are important to note. First, we utilized self-reported data with a relatively small sample size from only one mid-sized Canadian city. Our sample was fairly representative of teachers in Alberta (Government of Alberta, 2015), however the generalizability of the findings in terms of teachers' perspectives and beliefs more broadly may be limited. This could be mitigated in future research by aiming to recruit a larger sample from teachers across the country. This would not only increase the power to detect relationships that may have not emerged in the current sample but may also solidify themes that were reported. Second, much of the variance in teaching efficacy remains unaccounted for. Researchers in the future may wish to include other factors that help explain teacher self-efficacy such as support, their own teaching (i.e., themes they identified), personal characteristics (e.g., resources, hope; Levi et al., 2013), or special education experience (Warshaw, 2012). Researchers should also examine whether teachers' level of knowledge about causes is related to their work with students, their willingness to provide interventions, or their sense of self-efficacy (Ohan, Cormier, Hepp, Visser, & Strain, 2008). Third, we obtained a self-report measure of self-efficacy. Although the measure is demonstrably valid, researchers in the future may also want to supplement this with behavioural measures to determine whether teachers' thoughts actually impact what they do.

## **Implications**

Our findings have theoretical implications, illustrating that attribution theory is a comprehensive framework to apply in the current context, which adds further support to its widespread use in the education literature (Weiner, 2010). One important consideration is the notion that Weiner (1985) predicts attributions to influence cognitions, emotions and subsequent behaviours. However, we capture only a small portion of this sequence. Researchers in the future may benefit from obtaining behavioural measures of actual teacher practices thereby extending the test of the theory.

The results also have implications for researchers in the education domain. With regard to the open-ended responses, many themes emerged and often responses were difficult to code. However, including teachers' perspectives in educational research is critical as they are the ones in the classroom, and are at the forefront of students' education. Therefore, researchers in the future may benefit from conducting follow-up interviews to confirm or further explore themes, which could then be used to guide future studies. Furthermore, researchers should continue to examine which attributions for difficult student behaviour would be considered adaptive. The results of the current study would suggest that controllable and external attributions are adaptive, as they were commonly reported by more efficacious teachers. However, as the broader literature currently stands, these findings remain inconsistent.

Finally, there are also practical implications of the findings for both researchers and teachers. Overall, controllable attributions for student behaviour emerged as adaptive in this context. Teacher training may do well to include a component that fosters certain attributions for difficult student behaviours. This could include attributional retraining (AR), wherein individuals are trained to make more adaptive attributions (e.g., controllable). AR has been successful in the educational realm (Hamm, Perry, Clifton, Chipperfield, & Boese, 2014; Perry, Chipperfield, Hladkyj, Pekrun, & Hamm, 2014) and could be a valuable intervention for teachers within this context in order to foster a sense of self-efficacy. Furthermore, professional development interventions (e.g., Latouche & Gascoigne, 2017) have also been demonstrably effective for increasing knowledge of ADHD and efficacy of working with students. Researchers should continue developing such programs that can be tailored towards multiple common childhood difficulties (e.g., LD, FASD, anxiety) in order to foster a sense of self-efficacy. Finally, there remains a large amount of variability in teachers' understanding (i.e., themes), suggesting that educational efforts should continue at the pre-service level for disorders such as ADHD and LD. This will help ensure that teacher knowledge is more accurate, and hopefully elicit greater self-efficacy as well (Poznanski et al., 2018).

## **Conclusion**

Overall, practicing teachers have many perceptions of what causes students with ADHD and LD to struggle in the classroom, and these perceptions can impact their sense of self-efficacy. Gaining an understanding of teachers' knowledge and how self-efficacy develops is important for both researchers and practitioners in the field and may aid in fostering both student and teacher success.

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