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Please note that the page numbers of the three manuscripts included in this issue, originally published on October 23, 2023, November 4, 2023, and November 21, 2023, were corrected on January 22, 2024.

Please also note that a minor change in formatting in the manuscript titled "Exploring Kindergarten Teachers' Perception of In-Class Modelling by School-Based Speech-Language Pathologists Through Four Implementation Outcomes", originally published on November 21, 2023, was made on January 22, 2024.

Veillez noter que les numéros de page des trois manuscrits inclus dans ce numéro, initialement publiés le 23 octobre 2023, le 4 novembre 2023 et le 21 novembre 2023, ont été corrigés en date du 22 janvier 2024.

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Diagnostic Accuracy of the ADOS-2 in Children With Psychiatric Conditions



Précision diagnostique de l'ADOS-2 chez les enfants ayant des troubles psychiatriques

KEYWORDS
AUTISM
AUTISM DIAGNOSTIC OBSERVATION SCHEDULE-2
CHILDREN'S COMMUNICATION CHECKLIST-2
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COMORBIDITY

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Abstract

The Autism Diagnostic Observation Schedule (2nd edition, ADOS-2) shows excellent diagnostic accuracy when used with children suspected of having either autism or language/intellectual delays; however, its accuracy has been lower in children with psychiatric conditions. The purpose of this study was to determine the diagnostic accuracy of the ADOS-2 in pediatric psychiatry patients and to explore factors related to misclassification. Retrospective chart reviews for 84 consecutive autism query referrals in a local child psychiatry program were completed. Patient charts were reviewed for demographic and diagnostic information as well as scores on the ADOS-2 and the Children's Communication Checklist-2. Forty-four of 84 children were ultimately diagnosed with autism. Sensitivity of the ADOS-2 was 93% and specificity was 58%. Positive and negative predictive values were 71% and 89%, respectively. Thus, a negative result on the ADOS-2 was more informative than a positive result. The positive likelihood ratio showed a small difference, and the negative likelihood ratio showed a large difference. Overall, the ADOS-2 produced high rates of false positives in this pediatric psychiatry population. False positives were not related to the total number of psychiatric diagnoses children had received, but children diagnosed with attention-deficit/hyperactivity disorder and anxiety disorders were more likely to receive a false positive result.

Abrégé

La deuxième édition de l'Échelle d'observation pour le diagnostic de l'autisme (*Autism Diagnostic Observation Schedule* [ADOS-2]) offre une excellente précision diagnostique lorsqu'elle est utilisée avec des enfants chez qui un trouble du spectre de l'autisme ou un retard langagier ou intellectuel est suspecté. Sa précision est toutefois moindre chez les enfants ayant des troubles psychiatriques. L'objectif de la présente étude était de déterminer la précision diagnostique de l'ADOS-2 chez des patients et patientes pédiatriques vus en psychiatrie et d'explorer les facteurs associés aux erreurs de classification. Les dossiers médicaux de 84 enfants référés consécutivement en pédopsychiatrie pour une suspicion de trouble du spectre de l'autisme ont été analysés rétrospectivement. Les données démographiques, les diagnostics, ainsi que les scores obtenus à l'ADOS-2 et au questionnaire *Children's Communication Checklist-2*, ont été extraits. Ultiment, 44 des 84 enfants ont reçu un diagnostic de trouble du spectre de l'autisme. La sensibilité de l'ADOS-2 était de 93 % et sa spécificité de 58 %. Les valeurs prédictives positives et négatives étaient respectivement de 71 % et 89 %. Par conséquent, un résultat négatif à l'ADOS-2 était plus informatif qu'un résultat positif. Le rapport de vraisemblance positif indiquait une petite différence, alors que le rapport de vraisemblance négatif indiquait une grande différence. De manière générale, l'ADOS-2 a produit un nombre élevé de faux positifs dans cette population pédopsychiatrique. Le nombre de faux positifs n'était pas associé au nombre total de diagnostics psychiatriques posés aux enfants. Cependant, les enfants ayant reçu un diagnostic de trouble du déficit de l'attention ou d'hyperactivité et de troubles anxieux étaient plus susceptibles de recevoir un résultat faussement positif.

Differential diagnosis of autism is not a straightforward process in individuals with psychiatric conditions. Behavioural features can overlap with autism in conditions such as psychosis, anxiety disorder, and depression. Accurate and timely diagnosis of autism is extremely important as it allows access to services and interventions.

The Autism Diagnostic Observation Schedule (2nd edition, ADOS-2; Lord et al., 2012) is an interactive assessment that uses standardized activities and “presses” to elicit communication, social interaction, and repetitive interests. It is widely considered a key component of a gold standard autism assessment (Kamp-Becker et al., 2018).

Like any clinical assessment, both false positives (FPs) and false negatives (FNs) can occur. The original ADOS (Lord et al., 1989) and ADOS-2 discriminate well between children with autism and those suspected of having language and/or intellectual delays (e.g., Corsello et al., 2013; Lord et al., 2012). A meta-analysis of diagnostic accuracy findings across 14 studies of children assessed with the ADOS-2 found that both sensitivity and specificity were above 80% (Lebersfeld et al., 2021). However, some studies have found high rates of misclassifications (particularly FP) in other types of clinical samples. For example, Molloy et al. (2011) found that the ADOS-2 produced low specificity when the children assessed presented with a broad range of developmental and behavioural disorders. Specifically, Molloy and colleagues measured sensitivity at 79% and specificity at 68% for the module 3 original algorithm when using the autism spectrum disorder (ASD) cutoff. Adults with psychiatric conditions have received high rates of misclassification on the ADOS-2 in some past research as

well (Bastiaansen et al., 2011; de Bildt et al., 2016; Maddox et al., 2017). **Table 1** summarizes these findings.

Some research with adults has investigated the specific characteristics of individuals who receive a FP. A history of psychosis and a diagnosis of schizophrenia have been common in FP cases (Bastiaansen et al., 2011; de Bildt et al., 2016; Maddox et al., 2017). Adamou et al. (2021) found that the Restricted Interests domain of the ADOS-2 module 4 was able to predict autism status. Compared to adults with schizophrenia, adults who received an autism diagnosis were found to have more stereotyped language, less reciprocal social interaction, poorer quality of social response, and poorer quality of rapport (Bastiaansen et al., 2011).

A few studies have shown that children with psychiatric conditions also receive high FP rates on the ADOS-2. Greene et al. (2022) examined diagnostic accuracy of ADOS-2 module 3 from a referred sample of children who presented with high rates of developmental, cognitive, and psychiatric concerns, reporting a sensitivity of 99%, specificity of 65%, and FP rate of 34%. Colombi et al. (2020) found that the ADOS-2 had low rates of both sensitivity and specificity in children and youth with psychiatric conditions. The sensitivity was reported at 58% for module 3 and 56% for module 4. Specificity was reported at 57% for module 3 and 60% for module 4. Forty percent of participants in the Colombi et al. study were misclassified.

Research investigating the specific characteristics of children receiving psychiatry services who are misclassified by the ADOS-2 is limited to date. In one study that piloted

Authors (year)	ADOS version	Population	Findings	Data not reported
Bastiaansen et al. (2011)	ADOS	Males with autism, schizophrenia, psychopathy Controls	The ADOS correctly classified 74.2% of cases Mean scores for all ADOS domains were similar for participants with autism and participants with schizophrenia	Sensitivity Specificity Predictive values Likelihood ratios
de Bildt et al. (2016)	ADOS	Males with autism, schizophrenia, psychopathy Controls	Sensitivity for autism group = 55% Specificity for schizophrenia group = 67% Specificity for psychopathy group = 94% Specificity for control group = 95%	Predictive values Likelihood ratios
Maddox et al. (2017)	ADOS-2	Outpatients at community mental health centres	Sensitivity = 1.0 Specificity = .74 Positive predictive value = 25% Negative predictive value = 100%	Likelihood ratios

Note. ADOS data are reported for the autism spectrum disorder cutoff and the original algorithms. ADOS = Autism Diagnostic Observation Schedule.

the use of the ADOS (1st edition) in a psychiatric clinic, clinicians made note of anxiety disorders and attention-deficit/hyperactivity disorder (ADHD) in FP cases (Stadnick et al., 2015); however, only one study thus far has completed a statistical analysis of characteristics in FP cases: Greene et al. (2022). Greene and colleagues found higher rates of FPs in children and adolescents who were male, had low restricted and repetitive behaviour scores, had high anxiety levels during testing, and had trauma-based psychiatric concerns. The complexity of children assessed for autism (i.e., number of psychiatric conditions) has not been previously investigated as a factor in FP outcomes.

Social communication difficulties are a central component of autism. The speech-language pathologist assesses skills in this area of development during the autism differential diagnostic process. Social communication difficulties can also be present for children with other disorders, including ADHD, anxiety, and social (pragmatic) language disorder. The Children's Communication Checklist (2nd edition, CCC-2; Bishop, 2003) is a parent questionnaire that collects information about 10 domains of communication skills in children and has been used to assess social communication in many populations, including children with autism, ADHD, emotional-behavioural disorders, Williams syndrome, and anxiety (e.g., Bignell & Cain, 2007; Mackie & Law, 2010; Philofsky et al., 2007; van Steensel et al., 2013). The CCC-2 has been used in past research to identify communication concerns/disorders and to compare communication skills across diagnostic groups. The Social Interaction Difference Index (SIDI) of the CCC-2 is a measure of social communication skills. It is calculated by taking the difference between the scores of domains of basic communication (e.g., syntax and semantics) and scores of social domains (e.g., nonverbal communication). The SIDI represents an individual's social communication skills relative to their level of basic communication skills. The CCC-2 manual suggests a SIDI cutoff of -11 or below for identifying problems in social communication. In previous research, the SIDI of the CCC-2 has identified between 81% and 95% of children with autism as having social communication challenges (Philofsky et al., 2007; Volden & Phillips, 2010). The use of the CCC-2 in conjunction with the ADOS-2 for diagnosing autism in children with psychiatric conditions has not yet been studied.

Most existing studies that have investigated ADOS-2 diagnostic accuracy in individuals with psychiatric concerns have focused on adult samples. The current study adds to previous literature by reporting diagnostic accuracy for a pediatric sample and providing information about

the characteristics of children who were misclassified by the ADOS-2. This study is the first to investigate social communication test scores with respect to autism diagnosis in this population. This study also adds further interpretability to diagnostic accuracy data by providing positive and negative likelihood ratio calculations, a measure that does not rely on the prevalence of autism in the sample for interpretation.

The overall goal of this study was to evaluate the diagnostic accuracy of the ADOS-2 in children and youth with psychiatric conditions. The first objective was to determine the sensitivity, specificity, negative predictive value (NPV), positive predictive value (PPV), positive likelihood ratios, and negative likelihood ratios of the ADOS-2 in children with psychiatric disorders. The second objective was to examine differences between FPs and TNs with regard to psychiatric diagnosis. Many psychiatric conditions involve a social communication component (e.g., social anxiety, ADHD) or repetitive motor and vocal behaviour (e.g., Tourette's syndrome), and thus, we may see higher rates of FPs in children with a greater number of these conditions. The third objective was to examine differences between FPs and TNs with regard to social language skills. The final objective was to describe subdomain scores on the ADOS-2 for FPs, TNs, FNs, and TPs. Characterizing the diagnostic accuracy of the ADOS-2 and factors that are more likely to lead to FPs can provide clinicians with much needed information about the uses and limitations of the ADOS-2 in autism diagnostic queries in psychiatric programs. We hypothesized that (a) children with a greater number of psychiatric conditions would be more likely to receive a FP outcome on the ADOS-2, (b) children with ADHD and anxiety disorders would be more likely to receive a FP, and (c) CCC-2 SIDI scores would be lower in children with autism compared to children without autism.

Methods

This research was approved by the University of Alberta Human Research Ethics Board (Pro00103319).

Chart Reviews

Retrospective chart reviews were conducted for 84 consecutive ADOS-2 referrals through child psychiatry at a Canadian pediatric rehabilitation hospital. All children were referred for the ADOS-2 in response to an autism query by the psychiatry team. Assessments were conducted between September 2018 and March 2022 and involved an ADOS-2 assessment with the occupational therapist, a psychiatric assessment, a developmental interview with the psychiatrist, a speech-language assessment, and a psychological assessment. The diagnostic team consisted

of three speech-language pathologists (with 8–11 years of experience), two occupational therapists (with 13–21 years of experience), and one psychologist (with 21 years of experience) who consulted across programs. Five different psychiatrists were working in distinct programs within psychiatry and collaborated with the team of consultants for autism queries.

A wide range of language assessment tools were used, including the Clinical Evaluation of Language Fundamentals (5th edition), the Oral and Written Language Scales (2nd edition), and the Comprehensive Assessment of Spoken Language (2nd edition). The CCC-2 was most consistently administered across participants. Psychology tools included the Weschler Intelligence Scale for Children (5th edition), Weschler Preschool and Primary Scale of Intelligence (4th edition), Weschler Adult Intelligence Scale (4th edition), and the Stanford-Binet (5th edition). There was some variability in clinical procedures across programs within the psychiatry department (e.g., some children did not receive psychological testing if it had been previously completed). Decisions regarding autism diagnosis were made by the clinical team in case conference meetings that the patient's psychiatric nurse also attended to provide observations. All information was considered together and diagnoses were based on the *Diagnostic Statistical Manual of Mental Disorders* criteria, (5th ed.; DSM-5; American Psychiatric Association, 2013).

Children seen through both inpatient and outpatient services were included in the chart review. The following information was extracted from each patient's medical chart by a member of the research team: age in years and months, psychiatric diagnosis, yes/no for formal autism diagnosis, yes/no for meeting ASD cutoff on the ADOS-2, ADOS-2 module 3 or 4 scores, CCC-2 scores, yes/no for a diagnosis of language disorder, and full-scale IQ. Information was recorded on an Excel spreadsheet by a member of the study team. Any information that could not be located on the electronic or paper chart was left blank. No identifiable information was recorded from patient charts.

Sensitivity, Specificity, Predictive Values, and Likelihood Ratios

The ADOS-2 consists of four modules for individuals of differing language levels, from minimal or no language (module 1) to fluent language (modules 3 and 4). ADOS-2 scores are categorized as either below or above the ASD cutoff. Scores below the ASD cutoff indicate that a diagnosis of autism is not supported whereas scores above the ASD cutoff indicate that a diagnosis of autism is supported.

Sensitivity, specificity, NPV, and PPV are commonly reported in research as measures of diagnostic accuracy. Sensitivity refers to a test's ability to correctly identify when the target condition is truly present (true positive TP), and specificity refers to a test's ability to correctly identify when the condition is truly absent (true negative TN). PPVs estimate how likely it is that a person who tests positive truly has the condition, and NPVs estimate how likely it is that a person who tests negative truly does not have the condition. Higher sensitivity, specificity, and predictive values indicate a better performing test, with the maximum value being 100% and the lowest being 0%.

Likelihood ratios indicate how probable the test result is for clients with and without the condition. They combine information from sensitivity and specificity into one value and do not rely on clinical prevalence. Negative likelihood ratios look at how having a negative test result changes the chances of an individual having a condition. Negative likelihood ratios range from 1 to 0, with .5 indicating a *small difference*, .2 indicating a *medium difference*, and .1 indicating a *large difference*. For the negative likelihood ratio, values closer to 0 indicate higher importance of the test (Raslich et al., 2007). Positive likelihood ratios look at how having a positive test changes the chances of an individual having the condition. Positive likelihood ratios range from 1 to 10, with 2 indicating a *small difference*, 5 indicating a *moderate difference*, and 10 indicating a *large difference*. Positive likelihood ratios closer to 10 indicate higher importance of the test (Raslich et al., 2007).

Data Analysis

Descriptive statistics (means and standard deviations) were calculated to summarize the sample characteristics. FP, TN, FN, and TP rates were calculated using the ADOS-2 as the index test, and the formal autism diagnosis as the reference standard. Sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios were calculated to examine the performance of the ADOS-2 with this population. Mean ADOS-2 domain scores, mean number of psychiatric diagnoses, and mean scores on the CCC-2 SID1 were calculated for all four groups (FP, TN, FN, TP). Normality of the data was assessed using the Shapiro-Wilk test and the TN group was found to violate the assumptions of normality when comparing mean number of psychiatric diagnoses. Therefore, the nonparametric Mann-Whitney U test was used to examine the difference between the mean number of diagnoses in the FP and TN groups. As a post hoc exploratory analysis, chi-square tests were used to analyze differences in rates of ADHD and anxiety for FP and TN groups. Due to the exploratory nature of this analysis, *p* values were not adjusted (.05 was used).

Because the assumptions of normality were met, independent t tests were used to examine differences between the children without autism (FP and TN groups) and the children with autism (FN and TP groups) for mean CCC-2 SID1 scores and ADOS-2 Social Affect scores. Cohen's *d* was used as a measure of effect size. For ADOS-2 Restricted and Repetitive Behaviour scores, the assumptions of normality were not met, therefore, a Mann-Whitney U was conducted to compare autism and no-autism groups. Eta-squared statistics were calculated to describe the magnitude of difference for Restricted and Repetitive Behaviour. Module 4 test scores were not compared statistically because very few of our participants were given this module. All data analyses were conducted using Statistical Package for Social Sciences (SPSS) software, version 25 (IBM SPSSv25).

Results

Descriptive statistics are presented in **Table 2**. Participants' ages ranged from 6 years, 7 months to 17 years, 11 months, and full-scale IQs ranged from 71 to 132. The groups with and without autism were similar with respect to

male-to-female ratio, mean age, and mean IQ. Both groups also had similar ratios of children who were assessed using ADOS-2 module 3 compared to module 4. Eight psychiatric conditions were listed from the patient charts: the most common co-occurring condition across groups was ADHD and the second most common was anxiety.

Twenty-six children received scores below the ASD cutoff on the ADOS-2; however, three of them still received a diagnosis of autism because the psychiatric team's conclusion, when considering all assessment information together, differed from the ADOS-2 classification (representing FNs). Likewise, 58 children received scores above the ASD cutoff; however, 17 of them were not diagnosed with autism by the team (representing FPs). The number of children in each of the FP, TN, FN, and TP groups is presented in **Table 3** along with diagnostic accuracy of the ADOS-2.

The positive likelihood ratio was 2.19 and showed a small difference. The negative likelihood ratio was 0.12 and showed a large difference. The number of psychiatric diagnoses for children ranged from 1 to 5 (*M* = 2.7) in the

Characteristic	Full sample (autism and no autism diagnosis) <i>N</i> = 84*	Autism diagnosis <i>n</i> = 44*	No autism diagnosis <i>n</i> = 40*
Sex, <i>n</i> (%)			
Female	20 (24)	10 (23)	10 (25)
Male	64 (76)	34 (77)	30 (75)
Mean age (<i>SD</i>)	12 years, 9 months (3.23)	12 years, 10 months (3.24)	12 years, 8 months (3.26)
Mean IQ (<i>SD</i>)	96.90 (15.37) ^a	95.08 (15.03) ^b	98.89 (15.72) ^c
Module 3, <i>n</i> (%)	61 (75) ^d	31 (72) ^e	30 (79) ^f
Module 4, <i>n</i> (%)	20 (25) ^d	12 (28) ^e	8 (21) ^f
Psychiatric Diagnoses, <i>n</i> (%)			
Attention-deficit/hyperactivity disorder	54 (64)	27 (61)	27 (68)
Anxiety disorders	41 (49)	20 (45)	21 (53)
Tourette syndrome	25 (30)	14 (32)	11 (28)
Obsessive compulsive disorder	20 (24)	7 (16)	13 (33)
Learning disability	20 (24)	13 (30)	7 (18)
Depression/mood disorder	14 (17)	7 (16)	7 (18)
Parent-child relational problem ^j	11 (13)	5 (11)	6 (15)
Disruptive behaviour disorder	6 (7)	2 (5)	4 (10)
Developmental language disorder, <i>n</i> (%) ^k	22 (30) ^g	14 (35) ^h	8 (24) ⁱ

Note. Due to missing data, numbers vary in some categories as listed in specific notes below.
^a*n* = 73. ^b*n* = 38. ^c*n* = 35. ^d*n* = 81. ^e*n* = 43. ^f*n* = 38. ^g*n* = 73. ^h*n* = 40. ⁱ*n* = 33. ^jThis is listed as a "condition" (rather than a diagnosis) in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013). ^kFor children diagnosed with autism, the diagnostic label is "Language disorder in the context of autism spectrum disorder."

Table 3
Sensitivity, Specificity, and Predictive Power of the ADOS-2

ADOS-2 results	Diagnosed with autism <i>n</i> (%)	Not diagnosed with autism <i>n</i> (%)	Predictive value %
Autism	41 (49) True positives	17 (20) False positives	PPV = 70.7
No autism	3 (4) False negatives	23 (27) True negatives	NPV = 88.5
	Sensitivity = 93.2%	Specificity = 57.5%	

Note. ADOS-2 = Autism Diagnostic Observation Schedule (2nd edition); PPV = positive predictive value; NPV = negative predictive value.

FP group, 0 to 3 (*M* = 2.0) in the TN group, 2 to 6 (*M* = 3.7) in the FN group, and 0 to 4 (*M* = 2.0) in the TP group (see **Table 4**). The difference between the mean number of psychiatric diagnoses in the FP and TN groups was not significant (*U* = 139.000, *N*₁ = 23, *N*₂ = 17, *p* = .126). Differences in diagnosis rates for FP and TN groups were significant for ADHD, *X*² (1, *N* = 40) = 5.80, *p* = .016, and anxiety, *X*² (1, *N* = 40) = 3.88, *p* = .049.

Table 5 presents the social interaction and ADOS-2 domain scores by classification. The range of SIDI scores was 6 to -24 (*n* = 13) for the FP group, 14 to -20 (*n* = 12) for the TN group, -11 to -28 (*n* = 3) for the FN group, and -2 to -37 (*n* = 29) for the TP group. Of children who received an autism diagnosis, 69% had SIDI scores at or below the -11 cutoff. Of children who did not receive a diagnosis of autism, 56% had SIDI scores at or below the -11 cutoff. Children with

Table 4
Psychiatric and Language Diagnosis by ADOS-2 Classification

Diagnoses	No autism group		Autism group	
	False positive diagnosis (<i>n</i> = 17)	True negative diagnosis (<i>n</i> = 23)	False negative diagnosis (<i>n</i> = 3)	True positive diagnosis (<i>n</i> = 41)
Total number of psychiatric diagnoses, <i>M</i> (<i>SD</i>)	2.71 (1.11)	2.00 (1.09)	3.67 (2.08)	1.95 (0.95)
	3.00 (1-5) ^a	2.00 (0-3) ^a		
Psychiatric diagnoses, <i>n</i> (%)				
Attention-deficit/hyperactivity disorder	15 [*] (88)	12 [*] (52)	1 (33)	26 (63)
Anxiety disorders	12 [*] (71)	9 [*] (39)	0 (0)	20 (49)
Tourette syndrome	6 (35)	5 (22)	1 (33)	13 (32)
Obsessive compulsive disorder	4 (24)	9 (39)	0 (0)	7 (17)
Learning disability	4 (24)	3 (13)	3 (100)	10 (24)
Depression/mood disorder	3 (18)	4 (17)	2 (67)	5 (12)
Parent-child relational problem	2 (12)	4 (17)	3 (100)	2 (5)
Disruptive behaviour disorder	1 (6)	3 (13)	1 (33)	1 (2)
Developmental language disorder, <i>n</i> (%) ^b	5 (31) ^c	3 (18) ^d	1 (100) ^e	13 (33) ^f

^a Median (range) are reported because assumptions of normality were violated. Results were not significant. ^b Numbers vary due to missing data. ^c *n* = 16. ^d *n* = 17. ^e *n* = 1. ^f *n* = 39.
^{*} *p* < .05

Table 5

Social Interaction and ADOS-2 Domain Scores by False Positive, True Negative, False Negative, and True Positive Classification

Measure	No autism group		Autism group	
	False positive diagnosis	True negative diagnosis	False negative diagnosis	True positive diagnosis
Children’s Communication Checklist (2 nd edition): Social Interaction Difference Index, <i>M</i> (<i>SD</i>)	-10.23 (8.57) <i>n</i> = 13	-10.25 (9.28) <i>n</i> = 12	-16.67 (9.82) <i>n</i> = 3	-13.72 (7.00) <i>n</i> = 29
	-10.24* (8.72) <i>n</i> = 25		-14.00* (7.16) <i>n</i> = 32	
ADOS-2 domain scores, <i>M</i> (<i>SD</i>) Social affect, module 3	8.07 (2.15) <i>n</i> = 15	4.33 (1.68) <i>n</i> = 15	3.50 (3.54) <i>n</i> = 2	9.55 (2.41) <i>n</i> = 29
	6.2* (2.68) <i>n</i> = 30		9.16* (2.85) <i>n</i> = 31	
Restricted and repetitive behavior, module 3	1.5 (1.41) <i>n</i> = 15	0.47 (0.92) <i>n</i> = 15	0.00 (0.00) <i>n</i> = 2	1.59 (1.02) <i>n</i> = 29
	1.0 (1.29) 0.5 ^{a*} (0–4) <i>n</i> = 30		1.48 (1.06) 1.0 ^{a*} (0–4) <i>n</i> = 31	
Social communication total, module 4	13.00 (0.00) <i>n</i> = 2	6.00 (2.10) <i>n</i> = 6	3.00 (0.00) <i>n</i> = 1	10.36 (3.50) <i>n</i> = 11
	7.75 (3.69) <i>n</i> = 8		9.75 (3.96) <i>n</i> = 12	
Stereotyped behaviours and restricted interests total, module 4	1.00 (0.00) <i>n</i> = 2	0.83 (0.75) <i>n</i> = 6	0.00 (0.00) <i>n</i> = 1	1.73 (1.19) <i>n</i> = 11
	0.88 (0.64) <i>n</i> = 8		1.58 (1.24) <i>n</i> = 12	

^a Median (range) are reported because assumptions of normality were violated.
* *p* < .05

an autism diagnosis had lower scores on the CCC-2 SID1 (*M* = -14.00) than did children without an autism diagnosis (*M* = -10.24). This difference was significant, and the size of the effect was moderate (*t* = -1.788, *df* = 55, *p* = .0395, one tailed, *d* = 0.47). Children with an autism diagnosis had higher scores on the Social Affect domain (*M* = 9.16) than did children without an autism diagnosis (*M* = 6.2). This difference was significant, and the size of the effect was large (*t* = 4.173, *df* = 59, *p* = .00, one tailed, *d* = 1.069). Children with an autism diagnosis had higher scores on the Restricted and Repetitive Behaviour domain (*M* = 1.48) than children without an autism diagnosis (*M* = 1.00), the difference was significant (*U* = 330.000, *N*₁ = 30, *N*₂ = 31, *p* = .043), and the size of the effect was large ($\eta^2 = .132$).

Discussion

In our study, sensitivity and specificity values, predictive values, and likelihood ratios all showed that a negative result on the ADOS-2 is more informative than a positive result when children have co-occurring psychiatric conditions. Sensitivity and NPV were higher than specificity and PPV. Like in our sample, higher sensitivity relative to specificity has frequently been found in adult psychiatric samples referred for autism evaluation (i.e., Bastiaansen et al., 2011; de Bildt et al., 2016; Maddox et al., 2017). Our sensitivity and specificity values are comparable to those reported by Greene et al. (2022) in their sample with high rates of developmental, cognitive, and psychiatric concerns. This means that, although the ADOS-2 ASD cutoff is effective at

capturing individuals with autism, many individuals without autism also receive elevated scores on this assessment tool. High FP rates mean that clinicians using the ADOS-2 with psychiatric populations must be wary of overdiagnosing autism. Our findings indicate that around 40% of children meeting the ASD cutoff on the ADOS-2 did not meet DSM-5 criteria for a formal autism diagnosis. A comprehensive assessment that involves collecting a detailed developmental history, history of presenting symptoms including cognitive ability, language development/skills, and behavioural symptoms is the hallmark of autism evaluation and must be used in conjunction with the ADOS-2.

As a child's psychiatric presentation becomes more complex, determining if an additional diagnosis of autism is appropriate can become more challenging. In the present study, complexity was defined as the number of additional diagnoses the child presented with. Contrary to what we expected, the mean number of diagnoses did not differ significantly across FP and TN groups; however, the range of additional conditions across the two groups did differ descriptively, with those who had a higher number of conditions (4–5) all falling into the FP group and those who had zero additional conditions all falling into the TN group. The ADOS-2 scoring may not be sensitive to the number of conditions a child has per se, but to the additive effect of social communication and behavioural differences associated with ADHD and/or anxiety. Like our findings, previous research has noted high rates of ADHD and anxiety disorders in FP cases (Stadnick et al., 2015). Scores above cutoff on the ADOS-2 for children with these conditions may be more common as the symptoms could affect observable behaviours during the assessment. Unfortunately, information about anxiety levels during the testing session was not available on the patient charts, so we could not corroborate the findings of Greene et al. (2022) that test levels of anxiety were high in FP cases.

The possibility of using the CCC-2 SIDI as a measure of social communication to complement the ADOS-2 was also investigated in this research. The recommended SIDI cutoff score of –11 surprisingly only identified 69% of children with autism as having social communication challenges. This is lower than numbers published in previous research (81%–95%; Philofsky et al., 2007; Volden & Phillips, 2010). Because social communication differences are a core feature of autism, we would have expected a higher percentage of children to be identified with social communication challenges. The CCC-2 SIDI is a measure of the discrepancy between basic communication skills and social communication skills and thus may miss out on identifying children with social communication challenges who do not

have this discrepancy (who also have low basic language skills). The CCC-2 SIDI also identified many children without autism as having social communication challenges (56%). Not surprisingly, this indicates a high prevalence of social communication concerns in children referred for autism assessment through child psychiatry. Overall, our results indicate that we can generally expect lower SIDI scores for children with autism and higher scores for children without autism; however, there were children with autism who received scores above the cutoff (in the –2 to –11 range) and children without autism who received very low SIDI scores (as low as –24). All children with scores below –25 received an autism diagnosis. Interestingly, all FNs received a SIDI at or below the –11 cutoff; however, the number of FNs was too small in our sample to make any conclusions regarding the utility of the SIDI for identifying FNs.

Significant differences between module 3 Social Affect scores for the autism and no-autism groups are not surprising given the importance of affective differences in the autism population. We also expected to see a difference between ADOS-2 scores in the autism versus no-autism groups for Restricted and Repetitive Behaviours, because this domain of the test captures the second core feature of autism (characteristics such as focused interests, sensory processing differences, difficulty with change, and stereotyped motor movements like hand flapping, toe walking, rocking, etc.).

ADOS-2 FPs in adult populations have been linked to a diagnosis of psychosis and schizophrenia in past research (Bastiaansen et al., 2011; de Bildt et al., 2016; Maddox et al., 2017). These diagnoses are rarely given during childhood and adolescence and no cases were observed in our sample. Adult literature also cites high restricted interests, greater stereotyped language, poorer reciprocal social interaction, poorer quality of social response, and poorer quality of rapport on the ADOS-2 as factors that can differentiate FPs from individuals with autism (Adamou et al., 2021; Bastiaansen et al., 2011). We have presented domain scores for module 4 descriptively. Greene et al. (2022) found that children who received a FP on the ADOS-2 were more likely to be male and often had a positive history of trauma. We did not consider these variables in our analysis as none of our participants presented with trauma-related diagnoses and a high number of males were seen across all groups due to the composition of our sample.

Future Directions

Future research should consider how to measure the complexity of psychiatric cases referred for autism assessment and how complexity may relate to a FP

outcome on the ADOS-2. Following these cohorts over time could help to characterize those who do and do not meet criteria for an autism diagnosis and to understand their performance on the ADOS-2, particularly with respect to diagnoses that are given later in adulthood, such as psychosis and schizophrenia.

Small numbers of participants with specific conditions (e.g., OCD) made certain comparisons difficult in our sample. Future research with larger sample sizes is needed to investigate ADOS-2 classification accuracy for children with specific conditions. Future research can also focus on characterizing those who receive a FN outcome. Finally, there is a need for ADOS-2 diagnostic accuracy data in different age groups including older youth and young adults.

Limitations

One limitation of this research was that some data could not be located on patient charts, which led to missing data points in some cases and a differing *n* across variables. This is a limitation of using retrospective chart analysis as a data collection method.

Our study was adequately powered to address the primary research questions; however, statistical analysis of some additional variables was not possible due to the sample size. For example, it was difficult to characterize the children who received FNs in our sample, as our numbers were very low in this group. Colombi et al. (2020) found that their sample of children referred for an autism assessment through psychiatry had high FNs. Because there is a possibility of high FNs in some samples, information about the characteristics of these children can be helpful in predicting and identifying FNs. In this study, we used the team's diagnostic decision at a single point in time and did not monitor the stability of the diagnostic decision over time; therefore, changes to autism diagnosis could not be accounted for in our results.

Conclusions

The ADOS-2 produced a high number of FP outcomes in this sample of children with psychiatric conditions evaluated for autism. Caution is needed in interpreting positive ADOS-2 results when individuals referred for autism evaluation present with psychiatric concerns. Any comprehensive assessment for autism will combine a number of tools and should utilize a team approach to collecting information. With low numbers of FNs, the ADOS-2 continues to be a useful clinical tool in child psychiatry, as it is sensitive for identifying individuals who may be autistic.

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Effets d'une thérapie intensive de groupe pour les adolescentes et adolescents franco-québécois qui bégaiement : résultats d'une étude rétrospective



Impact of Intensive Group Therapy for Québec-French-Speaking Adolescents Who Stutter: Findings of a Retrospective Study

MOTS-CLÉS

BÉGALEMENT

THÉRAPIE INTENSIVE

GROUPE

ADOLESCENTS

EFFICACITÉ DE L'INTERVENTION

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Le bégaiement développemental est un trouble complexe qui affecte non seulement la parole, mais également les relations sociales et le développement identitaire chez plusieurs adolescentes et adolescents qui bégaiement. Les thérapies de groupe semblent une modalité appréciée et efficace auprès de cette population. L'Association des jeunes bègues du Québec propose depuis 1993 une thérapie intensive de groupe, sous forme de camp de vacances, aux jeunes de 13 à 17 ans. Au total, les adolescentes et adolescents reçoivent environ 50 heures d'intervention orthophonique, lesquelles sont consacrées depuis 2011 à une application adaptée du programme Camperdown accompagnée d'activités d'éducation psychologique inspirées de la thérapie cognitivocomportementale. L'objectif de la présente étude est d'évaluer les effets de cette thérapie intensive de groupe sur le plan de la parole. Pour y parvenir, une étude clinique rétrospective a été effectuée. Les données sociodémographiques et cliniques ont été extraites d'un échantillon de 44 dossiers de jeunes de 13 à 17 ans ayant bénéficié de la thérapie de groupe de l'Association des jeunes bègues du Québec de 2011 à 2019. Des statistiques descriptives ont permis d'obtenir un portrait détaillé des participantes et participants. Des analyses statistiques non paramétriques ont démontré une diminution significative ($p < 0,01$) des valeurs de pourcentage de syllabes bégayées et de sévérité subjective du bégaiement au terme des six jours de thérapie intensive. De plus, la majorité des jeunes avaient amorcé la phase III du programme Camperdown – qui comporte quatre phases au total. D'autres recherches sont nécessaires afin d'étudier l'efficacité de l'intervention auprès des adolescentes et adolescents qui bégaiement, notamment en regard des facteurs psychosociaux associés au bégaiement.

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Abstract

Developmental stuttering is a complex disorder that affects not only speech, but also social interactions and identity formation in many adolescents who stutter. Group therapy appears to be a popular and effective treatment modality for working with this population. Since 1993, the *Association des jeunes bègues du Québec* [Québec Association of Young Stutterers] has been offering intensive group therapy during summer camps to young people aged 13 to 17 years. In total, the adolescents receive approximately 50 hours of speech-language pathology therapy, which has been devoted to an adapted form of the Camperdown Program with cognitive behaviour therapy inspired activities since 2011. The aim of this study was to evaluate the impact of this intensive group therapy on adolescents' speech abilities using a retrospective clinical study design. Sociodemographic and clinical data were drawn from the clinical files of 44 individuals aged 13 to 17 who took part in the group therapy offered by the *Association des jeunes bègues du Québec* between 2011 and 2019. Descriptive statistics provided a detailed profile of the participants. Nonparametric statistical analyses showed a significant decrease ($p < .01$) in the percentage of syllables stuttered and in the subjective severity of stuttering after 6 days of intensive therapy. In addition, most of the individuals had begun Stage III of the four-stage Camperdown Program. Further research is needed to investigate the effectiveness of this intervention with adolescents who stutter, particularly with regard to the psychosocial factors associated with stuttering.

Définition du bégaiement

Le bégaiement, ou trouble de la fluidité développemental (traduction libre de *childhood-onset fluency disorder*; American Psychiatric Association, 2013) est un trouble neurodéveloppemental qui perturbe la fluidité et le rythme de la parole, débutant généralement avant l'âge de quatre ans (Yairi et Ambrose, 2013). Les caractéristiques primaires du bégaiement, souvent les premiers signes à apparaître, peuvent être des répétitions de sons, de syllabes ou de mots monosyllabiques, des blocages ou des prolongements de sons, et sont présentes de manière variable d'une personne à l'autre (Guitar, 2019; Yairi et Seery, 2023). Ces interruptions de la parole, appelées disfluidités typiques du bégaiement, peuvent s'accompagner de signes de lutte et de tension, aussi appelées caractéristiques secondaires. Par exemple, l'individu peut cligner des yeux, hocher la tête, changer de mots ou utiliser des interjections (« hum », « ok », « eeh ») pour échapper aux moments de bégaiement (Pertijs et al., 2014). À ces caractéristiques primaires et secondaires peuvent s'ajouter des caractéristiques tertiaires, correspondant aux impacts négatifs du bégaiement sur les plans émotionnel et cognitif (Connery et al., 2020; Iverach et al., 2018; Yaruss et Quesal, 2004), tels que des sentiments de frustration, de colère, de honte (Blood et al., 2011; Erickson et Block, 2013; Gabel et al., 2008) et l'appréhension des situations de communication (Blood et al., 2011; Erickson et Block, 2013). Dans certains cas, le bégaiement peut persister à travers l'adolescence et même jusqu'à l'âge adulte (Craig et al., 2002), et peut alors être associé à une diminution de la qualité de vie de la personne sur les plans social, éducatif et professionnel (Brignell et al., 2020).

Impacts psychosociaux du bégaiement à l'adolescence

Comparativement à leurs pairs qui ne bégaiement pas, plusieurs adolescentes et adolescents qui bégaiement éprouvent un plus grand impact négatif dans leur vie en raison du bégaiement, de même qu'une qualité de vie réduite (Beilby et al., 2012). Sur le plan affectif, plusieurs jeunes présenteraient davantage de réactions émotionnelles négatives associées à leur bégaiement en vieillissant, dont la peur, le stress et la honte (Blood et al., 2001), ce qui aurait un impact délétère sur leurs habiletés sociales et leur perception de soi. Concrètement, les jeunes peuvent se sentir moins bien acceptés socialement, éprouver de la difficulté à développer des amitiés, éviter des situations sociales en plus d'avoir une perception négative de leurs compétences communicatives (Blood et al., 2001; Blood et Blood, 2004) et d'obtenir possiblement de moins bons résultats scolaires (Erickson et Block, 2013). Ces perceptions et croyances négatives reliées

à l'appréhension de s'exprimer seraient associées à de plus grands risques d'intimidation (Blood et Blood, 2004, 2007). De fait, plusieurs adolescentes et adolescents qui bégaiement rapportent avoir été la cible de moqueries, voire d'intimidation en lien avec leur différence sur le plan de la parole (Blood et al., 2011; Erickson et Block, 2013). De nombreuses études rapportent en effet des proportions variables de jeunes ayant été victimes d'intimidation parce qu'elles et ils bégayaient, allant de 15 % (Hearne, Packman, Onslow et Quine, 2008) à 44 % (Blood et al., 2011). Le rejet par les pairs et l'intimidation sont des problèmes qui peuvent entraîner de graves conséquences à court et à long terme sur le développement psychosocial et l'adaptation globale des adolescentes et adolescents qui bégaiement, notamment une augmentation de l'anxiété sociale et de la détresse psychologique (Blood et Blood, 2004, 2007, 2016; Blood et al., 2011; Gunn et al., 2014; Smith et al., 2014). Dès lors, une compréhension approfondie du profil et des besoins de l'individu qui bégaiement, dès le plus jeune âge, est nécessaire pour adapter et personnaliser l'intervention orthophonique, dans le but de diminuer les impacts négatifs du bégaiement (Pertijs et al., 2014).

À ce propos, il est relevé dans de nombreuses références scientifiques, depuis au moins 20 ans, qu'une intervention optimale en orthophonie doit inclure non seulement une intervention sur le bégaiement audible et visible, mais aussi un travail sur les aspects cachés du bégaiement, soit les aspects cognitifs, affectifs et comportementaux (Baxter et al., 2015; Bothe et al., 2006; Connery et al., 2020; Johnson et al., 2016; Pertijs et al., 2014). En d'autres mots, il est primordial d'intervenir pour que la personne puisse avoir une fluidité confortable, se sentir plus à l'aise lorsqu'elle parle et s'exposer aux situations de communication significatives pour elle. Pour ce faire, des activités d'éducation psychologique, inspirée entre autres des thérapies cognitives comportementales (Beck, 1995) ou de la thérapie d'acceptation et d'engagement (*Acceptance and Commitment Therapy*; Harris, 2009), sont de plus en plus réalisées par des orthophonistes (Boyle, 2011; Cheasman et Everard, 2013; Hart et al., 2021; Menzies et al., 2009). Au Québec, au cours des dernières années, il est possible pour les orthophonistes de se former davantage pour acquérir les compétences nécessaires afin d'intervenir sur ces aspects psychosociaux, tout en respectant les limites de leur champ de pratique.

L'adolescence

L'adolescence est une phase de changements physiques, sociaux, cognitifs et émotionnels rapides (Crone et Dahl, 2012; Kilford et al., 2016) qui peut être définie comme une période intermédiaire durant laquelle la

personne, qui n'est ni un enfant ni un adulte, n'a pas ou peu de responsabilités sociales et pendant laquelle elle peut explorer, exercer et expérimenter différents rôles (Cloutier et al., 2021). Durant cette période, le développement des fonctions exécutives, c'est-à-dire la capacité à diriger les pensées et les actions en fonction d'objectifs internes, est particulièrement marqué (Kilford et al., 2016). Ce développement se manifeste par une augmentation de la flexibilité mentale ainsi que des capacités à se contrôler, à évaluer ses compétences et ses performances personnelles, à planifier des tâches, à travailler de manière indépendante et à résoudre des problèmes (Crone, 2009; Kilford et al., 2016). La construction de l'identité personnelle évolue également à l'adolescence en raison de la façon dont la ou le jeune considère l'autre et pense être perçue ou perçu par les autres (Cannard, 2019; Sebastian et al., 2008). À ce développement, s'associent une plus grande conscience de soi, une auto-évaluation accrue ainsi qu'une sensibilité et une préoccupation plus élevées face à l'opinion des autres (Somerville, 2013). La maturation normale de l'adolescence peut donc entraîner à la fois une plus grande conscience du bégaiement et une plus grande préoccupation du regard des autres, ce qui rend le traitement orthophonique singulier pour cette clientèle, voire plus complexe. En contrepartie, les adolescentes et adolescents présentent un ensemble de compétences cognitives qui peuvent les aider à s'engager plus favorablement dans un processus thérapeutique qui nécessite une autosurveillance, une réflexion et une autodirection que le feraient des enfants plus jeunes (Fry et al., 2014). En somme, la clientèle adolescente qui bégaiet se distingue de celles des enfants ou des adultes en raison des changements caractéristiques de cette période de vie. Malgré tout, l'intervention orthophonique auprès de cette clientèle spécifique demeure un domaine encore peu étudié (Baxter et al., 2015; Brignell et al., 2020; Fry et al., 2009; Nippold et Packman, 2012; Nye et al., 2013).

Spécificités et modalités de l'intervention orthophonique chez les adolescentes et adolescents qui bégaiet

Considérant les impacts psychosociaux du bégaiement à cet âge et la multitude de changements définissant la période de l'adolescence, plusieurs reconnaissent la nécessité de les considérer comme un groupe distinct, et non comme de « grands enfants » ou de « jeunes adultes » (Hearne, Packman, Onslow et O'Brian, 2008, p. 495). Ce constat découle de leur désir d'autonomie, d'indépendance, mais également de leur degré d'investissement face au changement (Rodgers et al., 2021).

Bien que la nécessité d'adapter les traitements aux besoins et aux intérêts de la clientèle adolescente soit

reconnue, rares sont les études qui se sont attardées à leur opinion à propos de la thérapie. L'étude de Hearne, Packman, Onslow et Quine (2008) est une des exceptions. Cette équipe de recherche a interviewé des individus âgés de 13 à 26 ans au sujet de leur expérience avec le bégaiement et de leur perception quant à la thérapie en orthophonie. Leurs résultats permettent de mieux comprendre les facteurs favorables à la collaboration et à l'engagement des adolescentes et adolescents dans un processus thérapeutique. La majorité des jeunes de l'étude se positionnait en faveur d'une thérapie orthophonique intensive pour les raisons suivantes : (1) l'intensité du traitement qui oblige à penser continuellement aux techniques de fluidité et (2) le fait que cette modalité soit plus représentative de la réalité, comparativement à une modalité de traitement individuelle. La modalité de groupe était également très appréciée, car elle permettait d'être avec des personnes du même âge qui partagent des intérêts communs, d'apprendre des autres et de découvrir d'autres personnes qui vivent une différence similaire. Les jeunes de l'étude ont aussi trouvé les activités de transfert particulièrement utiles pendant leur processus de thérapie. Il s'agit notamment d'entreprendre des tâches hors clinique, par exemple dans un lieu public comme un magasin, où les interactions sont réalisées dans le monde réel. Par-dessus tout, les jeunes dans l'étude de Hearne, Packman, Onslow et Quine (2008) soutiennent qu'avoir un bégaiement n'est pas une raison suffisante pour commencer un traitement. Ces jeunes soulignent l'importance que le suivi orthophonique soit entrepris à un moment opportun, c'est-à-dire quand elles et ils sentent le besoin de franchir cette étape.

Plusieurs autres études corroborent que la modalité de groupe est appréciée et souhaitable chez la clientèle adolescente (Fry et al., 2014; Herring et al., 2022; Keilmann et al., 2018; Laiho et Klippi, 2007) et que les résultats obtenus sur le plan de la diminution du bégaiement sont aussi intéressants qu'en modalité individuelle (Carey et al., 2014). De même, l'efficacité de l'intervention serait optimisée pour plusieurs jeunes lorsque l'orthophoniste favorise leur responsabilisation et le développement de leurs habiletés d'auto-évaluation (Bothe et al., 2006).

Le programme Camperdown pour les adolescentes et adolescents qui bégaiet

Même si davantage de recherches avec un devis scientifique rigoureux sont nécessaires afin d'appuyer le traitement du bégaiement auprès de la clientèle adolescente (Brignell et al., 2020; Hofslundsengen et al., 2022), le programme Camperdown (PC) figure parmi les traitements qui ont montré des effets bénéfiques pour cette clientèle. Bien que ce programme ait été conçu

initialement pour les adultes, des études ont indiqué une diminution significative des disfluidités typiques du bégaiement auprès des adolescentes et adolescents utilisant le PC (Carey et al., 2012, 2014; Hearne, Packman, Onslow et O'Brian 2008).

Le PC s'inscrit au sein d'une approche de restructuration (ou façonnement) de la parole et se divise en quatre phases : l'enseignement des composantes du traitement (phase I), l'établissement de la fluidité (phase II), la généralisation (phase III), et le maintien des acquis (phase IV; O'Brian et al., 2018). Tout d'abord, l'orthophoniste enseigne un patron de parole prolongée, qui est non naturel et incompatible avec le bégaiement, en utilisant une échelle de sévérité subjective à neuf ancrs (SEV; 0 = pas de bégaiement, 8 = bégaiement extrêmement sévère) et une échelle de technique de fluidité à neuf ancrs (TF; 0 = pas de technique, 8 = modèle d'entraînement, qui est incompatible avec le bégaiement¹; O'Brian et al., 2018). Par la suite, la personne apprend à utiliser la TF lors de pratiques structurées en thérapie dans le but de produire une parole fluide (SEV 0) et graduellement plus naturelle (TF entre 0 à 2). Lors de la phase de généralisation, l'utilisation de la TF est encouragée lors des situations de communication quotidiennes. Enfin, l'objectif de la phase de maintien est de permettre à l'individu qui bégaiant de maintenir une parole la plus naturelle possible à long terme et avec une fluidité satisfaisante dans les situations de communication significatives de sa vie de tous les jours.

L'Association des jeunes bégues du Québec et son camp intensif : la formule québécoise

L'Association des jeunes bégues du Québec (AJBQ), fondée en 1993, est un organisme à but non lucratif qui a pour mission « d'offrir aux jeunes qui bégaiant l'espoir, les connaissances et la confiance pour se réaliser pleinement » (AJBQ, s. d.). Pour ce faire, l'association offre une modalité de traitement orthophonique unique au Québec, soit une thérapie intensive de fluidité de groupe, se déroulant sous forme d'un camp de vacances (AJBQ, 2016). Ce camp, offert aux jeunes qui ont entre 8 et 17 ans, est d'une durée de six jours, et a lieu une fois par été, au début du mois d'août. Les jeunes qui participent forment deux groupes, selon leur âge : âge scolaire (8 à 12 ans) et adolescence (13 à 17 ans). Il y a un maximum de 20 participants et participantes pour chacun des groupes, avec en moyenne sept individus par année dans le groupe adolescence. Le ratio jeunes-orthophoniste est de trois pour un.

Depuis 2011, les orthophonistes d'expérience qui travaillent avec le groupe adolescence utilisent les

principes du PC (O'Brian et al., 2018) et des activités d'éducation psychologique inspirées de la thérapie cognitivocomportementale, ciblant entre autres la restructuration cognitive et des techniques d'exposition graduée (Beck, 1995; Menzies et al., 2009). Les interventions orthophoniques en lien avec le PC sont réalisées majoritairement en sous-groupes, avec des moments de travail individuel, suivant l'évolution de chaque participante et participant. Certaines activités d'éducation psychologique se déroulent sous forme de discussions en grand groupe; à l'aide de mises en situation, les jeunes qui bégaiant s'expriment sur différents sujets, partagent leur vécu, se questionnent et échangent sur les comportements et attitudes favorables à adopter. Les thèmes abordés sont, entre autres : définition et perception du bégaiement, stress et anxiété, intimidation, affirmation de soi, résolution de problèmes et l'après-thérapie. Le modèle de la thérapie cognitivocomportementale, qui vise à reconnaître les réactions corporelles, les émotions ressenties, les pensées et les comportements (Beck, 1995), est également expliqué, discuté et appliqué à différentes situations, de manière individuelle avec les jeunes. Chaque personne est aussi amenée à s'exposer graduellement et à son rythme à des situations sociales stressantes (défis de parole) selon les principes de l'exposition graduée et en utilisant une échelle de stress adaptée à partir de l'échelle d'anxiété à 11 ancrs (0 = pas d'anxiété, 10 = très grande anxiété) qui a été ajoutée au PC en 2015 (O'Brian et al., 2015). Des blocs de thérapie sont proposés en alternance avec des activités de plein air (p. ex. kayak, baignade, escalade, etc.) pour favoriser la généralisation des stratégies enseignées. Pour favoriser leur responsabilisation, les jeunes notent entre autres leur SEV trois fois par jour (matin, après-midi, soirée), déterminent leurs objectifs d'exposition et s'autoévaluent dans l'atteinte de ces derniers, notamment grâce à l'utilisation quotidienne d'un journal réflexif. Les parents peuvent assister, au sixième jour (J6), à une présentation orale préparée par les jeunes et à la remise du bilan d'évolution orthophonique. Trois rencontres post-camp, animées par des orthophonistes du camp et des bénévoles, d'une durée de trois heures en présentiel, sont également offertes aux adolescentes et adolescents, et ce, un mois, trois mois et six mois après le camp.

À ce jour, nous possédons que très peu de données quant à l'efficacité de la thérapie intensive de fluidité de groupe de l'AJBQ, outre l'étude de cas de Forest (2014), qui avait constaté une diminution du bégaiement chez six jeunes ayant participé au camp. Par ailleurs, aucune analyse statistique inférentielle n'a été réalisée à ce jour, ce à quoi la présente étude vise à remédier.

¹Des modèles de TF produit par *Australian Stuttering Research Centre* (2022) en format audio sont disponibles en langue anglaise en ligne (<https://www.uts.edu.au/asrc/resources/camperdown-program>).

Le but de la présente étude consiste donc à évaluer les effets d'une thérapie intensive pour les adolescentes et adolescents francophones qui bégaiement, soit celle offerte par l'AJBQ. Les objectifs spécifiques sont les suivants :

- 1) Documenter l'effet de la thérapie intensive de groupe de l'AJBQ sur la fréquence du bégaiement, c'est-à-dire le pourcentage de syllabes bégayées (% SB) et la sévérité subjective (SEV) d'adolescentes et adolescents francophones qui bégaiement;
- 2) Documenter l'application du PC dans un cadre non traditionnel, soit sous la forme d'un camp de vacances de 6 jours;
- 3) Comparer les mesures de % SB et de SEV obtenues chez les campeuses et campeurs qui en étaient à leur première participation, soit les nouvelles et nouveaux, par rapport à ceux qui reviennent, soit les anciennes et anciens.

L'hypothèse émise pour le premier objectif est que la thérapie intensive de l'AJBQ réduirait significativement la fréquence et la sévérité du bégaiement chez les individus,

comme documenté dans des études antérieures comparables (Carey et al., 2012, 2014). Les deux autres objectifs sont de nature exploratoire. Cette étude a été approuvée par le comité d'éthique de la recherche sur les êtres humains de l'Université du Québec à Trois-Rivières (CER-20-272-07.10).

Méthode

Participant·es et participant·es

Un nombre total de 44 individus francophones ($n = 12$ filles, $n = 32$ garçons), âgés en moyenne de 14,4 ans, ont bénéficié de la thérapie intensive de l'AJBQ entre 2011 et 2019 et ont autorisé l'AJBQ à partager les informations consignées à leur dossier à des fins de recherche. À noter qu'en 2020, en raison de la pandémie de COVID-19, le camp s'est tenu à distance avec une formule différente et qu'en 2021 et 2022 il n'y a pas eu de camp. Pour être retenus, les sujets devaient : (1) être âgés de 13 à 17 ans inclusivement et (2) avoir participé à la totalité des activités thérapeutiques incluses dans la programmation du camp. Le **tableau 1** rapporte les informations détaillées sur les jeunes. Ces informations ont été collectées à partir des

Tableau 1

Données socio-démographiques des 44 participant·es et participant·es

Cohorte	<i>n</i>	Âge		Sexe		Présence troubles associés*		Thérapie antérieure**		Campeur (-euse)s***	
		<i>M</i>	<i>É-T</i>	Fém.	Masc.	Oui	Non	Oui	Non	Nouv.	Anc.
2011	3	14,7	2,1	2	1	1	2	1	2	2	1
2012	7	14,4	1,1	1	6	4	3	0	7	4	2
2013	7	13,7	0,8	3	4	4	2	4	3	4	2
2014	5	15,6	1,1	2	3	3	2	2	3	2	3
2015	4	14,8	1,7	3	1	2	2	2	2	2	2
2016	5	14,4	1,3	0	5	1	4	3	2	5	0
2017	6	14,0	1,1	0	6	1	5	0	3	2	3
2018	3	14,3	2,3	0	3	1	2	2	0	2	1
2019	4	13,8	1,0	1	3	1	3	2	1	0	4

Note. Moy. = moyenne; Fém. = féminin; Masc = masculin; Nouv. = nouveau(-elle); Anc. = ancien(ne).

* Données manquantes pour un dossier (total de 43)

** Données manquantes pour cinq dossiers (total de 39)

*** Données manquantes pour trois dossiers (total de 41)

différents documents que devaient remplir les jeunes et leurs parents lors de l'inscription à la thérapie intensive. Le nombre d'inscriptions annuelles pour chacune des neuf cohortes se situe entre trois et sept. Un total de 41,0 % des jeunes bénéficiaient d'un suivi orthophonique dans l'année précédant le camp ($n = 16/39$), ce qui correspond à la variable « thérapie antérieure ». Il est à noter que les variables « sexe » et participation à une « thérapie antérieure », qui ont été mesurées de manière dichotomique et qui comprennent un nombre considérable de participantes et participants par groupes, ont fait l'objet d'analyses pour vérifier leur effet potentiellement confondant quant aux différences mesurées sur les variables dépendantes à l'étude (% SB et SEV). Des analyses de différences non paramétriques (Mann-Whitney) préliminaires ont été réalisées et aucune différence significative n'a été obtenue, ce qui soutient la décision d'utiliser l'échantillon complet dans les analyses.

La majorité (56,1 %) des participantes et participants ($n = 23/41$, car des données sont manquantes pour trois dossiers) indiquait participer pour la première fois au camp, ce qui réfère ici aux nouvelles campeuses et nouveaux campeurs. Les jeunes qui étaient présents ou présentes lors d'une édition antérieure réfèrent aux anciennes campeuses et anciens campeurs. Un peu moins de la moitié (41,9 %) des adolescentes et adolescents ($n = 18/43$, car une donnée est manquante pour un dossier) affirment présenter un ou plusieurs troubles associés à leur bégaiement. Le trouble déficitaire de l'attention avec ou sans hyperactivité est la condition la plus fréquente ($n = 6/18$), suivie de la dyspraxie verbale ($n = 4/18$), du trouble d'anxiété ($n = 3/18$) et du trouble de langage ($n = 2/18$). L'origine géographique des jeunes est la suivante : Québec ($n = 39$), Ontario ($n = 1$), Nouveau-Brunswick ($n = 2$) et Belgique ($n = 2$). Dans leur ensemble, 81,8 % ($n = 36/44$) des adolescentes et adolescents estiment leur niveau de motivation à participer à la thérapie intensive de fluidité de « élevé » à « très élevé » (sur une échelle maison de type Likert à cinq ancrés).

Description de l'intervention et adaptations

Certaines adaptations du PC, initialement utilisé en thérapie individuelle, ont été mises en place en raison du contexte intensif et de groupe du camp, comme recommandé dans le programme (O'Brian et al., 2018). Par exemple, pour passer de la phase I à la phase II, le programme original demande que la personne maintienne la SEV de sa parole à 0, en utilisant les niveaux 7-8 de la TF, pendant toute la période d'une rencontre individuelle en orthophonie, soit environ 50 minutes. Cette durée étant

jugée irréaliste sur le plan logistique dans le contexte du camp, les orthophonistes ont décidé, en se basant sur leur jugement clinique, de réduire la durée à environ 30 minutes. Le même principe a été appliqué pour les conversations pour passer de la phase II à la phase III, lorsque la personne doit maintenir la SEV de sa parole à 0, en utilisant la TF la plus satisfaisante pour elle ou lui.

Mesures des résultats

Dans le contexte de la thérapie intensive, toutes ces mesures ont été effectuées par les orthophonistes, et comptabilisées dans le bilan d'évolution orthophonique.

Pourcentage de syllabes bégayées (% SB)

Le pourcentage est établi selon la formule suivante : le nombre de syllabes bégayées, divisé par le nombre de syllabes dites totales, multiplié par 100 (Jones et al., 2006). Le % SB a été calculé en temps réel par les orthophonistes d'expérience participant au camp intensif à partir d'un échantillon d'environ 300 syllabes en conversation avec une ou un jeune, en contexte individuel. Afin de favoriser la fidélité de la mesure entre les orthophonistes, seuls les moments de bégaiement non ambigus ont été comptés. Ces moments étaient définis comme des moments de bégaiement qui seraient perçus comme du bégaiement par une majorité de personnes et qui n'incluaient pas de disfluidités normales (Onslow, 2003; Onslow et al., 2021). Le % SB a été mesuré par la ou le même orthophoniste à deux reprises au jour 1 (J1), préthérapie, et à deux reprises au jour 6 (J6), post-thérapie, selon le protocole de l'AJBQ. Malgré cette procédure, certaines données étaient manquantes. Ainsi, lorsque disponible, la moyenne des deux mesures prises en préthérapie ou en post-thérapie a été calculée. Autrement, la seule mesure disponible a été comptabilisée. De plus, le pourcentage de réduction a été calculé à l'aide de la formule suivante (inspiré de Craig et al., 1996) : % réduction = $100 * ([\% \text{ SB au début} - \% \text{ SB à la fin}] / \% \text{ SB au début})$.

La sévérité du bégaiement (SEV)

La SEV des jeunes a été évaluée par les orthophonistes à l'aide de l'échelle de sévérité subjective à neuf ancrés du PC (0 = pas de bégaiement, 8 = bégaiement extrêmement sévère²; O'Brian et al., 2018). Cette échelle est une méthode valide et fiable pour évaluer la sévérité du bégaiement (O'Brian et al., 2004). Selon le protocole de l'AJBQ, les mesures ont été prises au J1 et jour 5 (J5), et correspondent à la parole typique de la ou du jeune lors de ses échanges conversationnels spontanés.

² Une modification des échelles de sévérité et de technique de fluidité a eu lieu en 2015 passant d'échelles cotées de 1 à 9 à des échelles cotées de 0 à 8 (O'Brian, et al., 2016). Afin de pallier le décalage engendré par cette modification, nous avons procédé à un recodage en soustrayant 1 à chacune des données relatives à la SEV, pour les dossiers des années 2011 à 2015 inclusivement.

De plus, le pourcentage de réduction a été calculé à l'aide de la formule suivante (inspiré de Craig et al., 1996) :

$$\% \text{ réduction} = 100 * ([\% \text{ SEV au début} - \% \text{ SEV à la fin}] / \% \text{ SEV au début}).$$

L'application du PC

L'application du PC a été documentée selon : (1) les phases complétées du PC et (2) les scores de TF post-thérapie. Selon le protocole de l'AJBQ, la phase complétée était comptabilisée par l'orthophoniste au J5 de la thérapie intensive. Rappelons que le PC comporte quatre phases : I) l'enseignement des composantes du traitement, II) l'établissement de la fluidité, III) la généralisation, et IV) le maintien des acquis (O'Brian et al., 2018). Les scores de TF ont quant à eux été évalués par les orthophonistes à l'aide de l'échelle de TF à neuf ancrs du PC (0 = pas de technique, 8 = modèle d'entraînement; O'Brian et al., 2018). Selon le protocole de l'AJBQ, le score de TF était comptabilisé par l'orthophoniste au J5, et correspondait au niveau de TF jugé nécessaire pour une parole non bégayée ou très peu bégayée (SEV entre 0 et 1) chez l'individu en contexte de parole spontanée (p. ex. en conversation libre).

Les aspects psychosociaux

Bien qu'une partie de l'intervention à la thérapie intensive de fluidité de l'AJBQ porte sur les aspects affectifs, cognitifs et sociaux, aucune mesure formelle préthérapie et post-thérapie n'a été effectuée pour les documenter.

Collecte et analyse des données

Les dossiers des participantes et participants à la thérapie intensive de fluidité de 2011 à 2019 ont été analysés de manière rétrospective. Les données ont été collectées selon un protocole clinique de prise de mesures établi par les orthophonistes participant au camp. Le consentement écrit des jeunes (ou des parents pour les jeunes de 13 ans) a été donné lors de l'inscription au camp. Les bilans et formulaires ont été anonymisés et numérisés pour l'ensemble des dossiers ciblés, puis un code numérique a été attribué à chacun des dossiers pour les besoins de la recherche. Les données ont été extraites et saisies dans le logiciel Excel par la 4^e auteure et contre-vérifiées par les deux premières auteures.

Des statistiques descriptives ont été effectuées pour documenter les caractéristiques sociodémographiques des participants et pour documenter les phases complétées du PC et l'échelle de TF atteinte à la fin de la thérapie (objectif 2). Pour les objectifs 1 et 3, des tests non paramétriques ont été réalisés en raison de la distribution anormale de trois des quatre variables, soit le % SB au J1, le % SB au J6 et la

SEV au J5. Par conséquent, les analyses statistiques se sont basées sur le test de Wilcoxon pour données appariées (objectif 1) et le test U de Mann-Whitney (objectif 3) avec un niveau α de 0,05. Étant donné que des analyses non paramétriques ont été utilisées, la taille de l'effet a été calculée à l'aide de la formule $r = Z/\sqrt{N}$ (Rosenthal, 1994). Les lignes directrices pour r indiquent qu'un petit effet est de 0,1, un effet moyen de 0,3 et un effet important de 0,5 (Cohen, 1988). Le logiciel IBM SPSS 28 a été utilisé pour le traitement des données.

Résultats

Les résultats pour chacun des trois objectifs spécifiques de recherche sont présentés dans les sections suivantes.

Objectif 1 : Documenter l'effet de la thérapie intensive de fluidité sur la fréquence et la sévérité du bégaiement

Les résultats pour la fréquence et la sévérité sont présentés ci-après.

Pourcentage de syllabes bégayées (% SB)

Les statistiques descriptives, présentées au **tableau 2**, montrent que la moyenne du groupe préthérapie pour le % SB, soit à l'arrivée au camp au J1, était de 8,29 % ($\bar{E}-T = 7,67$). Ces pourcentages variaient entre 0 et 34,00 % SB. À la toute fin de la thérapie, soit au J6, la moyenne pour le % SB était de 3,30 % ($\bar{E}-T = 3,54$). Ces pourcentages variaient entre 0 et 19,10 % SB.

La thérapie intensive de fluidité a engendré une réduction du % SB chez 38 adolescents ou adolescentes sur 44. Le pourcentage de réduction moyen du groupe est de 51,07 % ($\bar{E}-T = 35,59$). Trois jeunes ont présenté une augmentation minimale et trois autres ont maintenu un % SB égal à 0 en post-thérapie. Les résultats au test de Wilcoxon indiquent qu'il existe une différence significative entre les % SB moyens en préthérapie et post-thérapie, avec une grande taille d'effet ($Z = -5,04, p < 0,001, r = 0,54$).

Sévérité du bégaiement (SEV)

Rappelons que la mesure de la SEV a été prise à J1 et J5 selon le protocole de mesure de l'AJBQ. Les statistiques descriptives, présentées au **tableau 2**, montrent que la sévérité moyenne préthérapie, soit à l'arrivée au camp (J1), était de 3,99 ($\bar{E}-T = 1,83$). Celle-ci variait entre 1 et 8. En post-thérapie, soit au J5, la sévérité moyenne était de 2,01 ($\bar{E}-T = 1,27$). Celle-ci variait entre 0 et 5. Au total, 38 jeunes sur 44 participants et participantes ont présenté une réduction de la SEV. Le pourcentage de réduction moyen du groupe est de 44,34 % ($\bar{E}-T = 34,62$). Cette mesure est demeurée inchangée pour quatre jeunes et trois auraient quant à eux connu une légère augmentation de la sévérité de leur

Tableau 2

Statistiques descriptives, pourcentage de réduction et comparaisons de moyennes à mesures répétées réalisées à partir du test de Wilcoxon pour la fréquence et la sévérité du bégaiement

Mesures (<i>n</i> = 44)	Pré <i>M</i> (<i>É-T</i>)	Post <i>M</i> (<i>É-T</i>)	% Réduction <i>M</i> (<i>É-T</i>)	Wilcoxon (<i>Z</i>)	Taille d'effet
Pourcentage de syllabes bégayées	8,29 (7,67)	3,30 (3,54)	51,07 (35,59)	-5,04 *	0,54
Sévérité du bégaiement	3,99 (1,83)	2,01 (1,27)	44,34 (34,62)	-5,33 *	0,57

Note. Pré *M* = moyenne du groupe préthérapie; Post *M* = moyenne du groupe post-thérapie.
* $p < 0,001$

bégaiement. Les résultats au test de Wilcoxon indiquent qu'il existe une différence significative entre les mesures de la SEV moyennes en préthérapie et post-thérapie, avec une grande taille d'effet ($Z = -5,33, p < 0,001, r = 0,57$).

Objectif 2 : Documenter l'application du PC dans un cadre non traditionnel, soit sous la forme d'un camp de vacances de six jours

Au terme de la thérapie intensive de fluidité de groupe de l'AJBQ, les jeunes ont bénéficié en moyenne de 50,04 heures d'intervention, dont 21,03 heures du PC adapté (voir **tableau 3**). Parmi les jeunes pour lesquels les données étaient disponibles, 31,0 % ($n = 13/42$) ont complété la phase I, 64,3 % ($n = 27/42$) la phase II, et 4,8 % ($n = 2/42$) la phase III. La médiane pour la phase de la thérapie complétée est de 2. La moyenne du groupe ($n = 37$) pour le score de TF atteint à la fin de la thérapie était de 2,00 ($\bar{E}-T = 0,91$) avec une mesure de la SEV entre 0 et 1 en contexte de communication spontanée; le score minimum atteint était de TF 0 et maximum de TF 4.

Objectif 3 : Comparer les mesures de fréquence et de sévérité du bégaiement obtenues chez les nouvelles et nouveaux campeurs par rapport à ceux qui reviennent

Le **tableau 4** présente les statistiques descriptives relatives aux pourcentages de réduction du % SB et de la SEV pour les groupes de nouvelles campeuses et nouveaux campeurs et les anciennes et anciens, c'est-à-dire ceux qui ont participé plus d'une fois à la thérapie intensive. Il présente également les comparaisons de moyennes réalisées à partir de tests de Mann-Whitney. À cet effet, aucune différence significative n'a été obtenue entre les deux groupes. En d'autres mots, les résultats illustrent que le groupe de nouvelles campeuses et nouveaux campeurs, qui présente un pourcentage de réduction moyen du % SB de 47,44 % ($\bar{E}-T = 38,91$) obtient un score similaire à celui du

groupe des anciennes et anciens ($M = 49,77; \bar{E}-T = 31,35$), comme démontré par le test de Mann-Whitney ($U = 206, p = 0,979$). De même, le groupe de nouvelles campeuses et nouveaux campeurs, qui présente un pourcentage de réduction moyen de la SEV de 37,31 % ($\bar{E}-T = 35,83$), obtient un score similaire à celui du groupe des anciennes et anciens ($M = 47,64; \bar{E}-T = 32,35$), $U = 171, p = 3,42$.

Discussion

Cette étude avait pour objectif d'étudier les effets de la thérapie intensive de groupe de l'AJBQ destinée aux adolescentes et adolescents francophones du Québec qui bégaiement. Plus précisément, l'étude rétrospective de 44 dossiers a permis de brosser le portrait sociodémographique de la clientèle ayant bénéficié du camp de 2011 à 2019. De plus, elle a permis de documenter l'effet sur le % SB et sur la SEV des jeunes, de connaître la progression de chaque jeune dans les quatre phases du PC ainsi que leur TF à la fin de la thérapie, et de comparer les résultats des campeuses et campeurs qui en étaient à leur première participation par rapport à ceux qui reviennent (anciennes et anciens).

Pour le premier objectif, les résultats démontrent que les adolescentes et adolescents obtiennent une réduction significative du % SB à la suite de leur participation à cette thérapie, correspondant à une diminution de plus de la moitié de leur % SB, ce qui est considéré comme une intervention efficace (Baxter et al., 2015). Ensuite, dans leur méta-analyse, Nye et al. (2013) ont avancé que selon l'effet global, les interventions thérapeutiques en bégaiement permettraient de réduire le % SB d'environ un écart-type chez les enfants, les adolescentes et les adolescents. Les résultats obtenus dans la présente étude convergent en ce sens. Le pourcentage moyen de réduction de la SEV de la présente étude (44,34 %)

Tableau 3**Répartition moyenne des heures* selon le type d'intervention**

Type d'intervention	M (h)	É-T
Programme Camperdown adapté	21,03	0,81
Éducation psychologique (inspirée de la thérapie cognitivocomportementale)	16,69	0,54
Généralisation	12,32	0,60
Total	50,04	0,65

*Calculées avec les horaires disponibles, soit ceux des années 2012 à 2017.

Tableau 4**Pourcentage de réduction moyen du pourcentage de syllabes bégayées et de la sévérité du bégaiement des nouveaux(-elles) campeur(-euse)s comparativement aux ancien(ne)s**

Mesures	Nouveaux (-elles) n = 23	Ancien(ne)s n = 18	Mann-Whitney (U)
% de réduction du pourcentage de syllabes bégayées	47,44 (38,91)	49,77 (31,35)	206
% de réduction de la sévérité du bégaiement	37,31 (35,83)	47,64 (32,35)	171

se compare aux résultats de Carey et al. en 2014, dont la moyenne de réduction de groupe est de 45 %. Rappelons cependant que la modalité de traitement offerte par l'AJBQ se démarque de l'équipe australienne de Carey par la forme et le contenu de l'intervention, de même que par le moment de prises de mesures. En effet, la thérapie intensive de l'AJBQ est réalisée en groupe, en modalité intensive en présentiel, et combine le PC à plusieurs heures d'éducation psychologique inspirées de la thérapie cognitivocomportementale. Le pourcentage de réduction de la SEV est calculé post-thérapie, soit au J5, lorsque la majorité des jeunes ont atteint la phase III du PC. En comparaison, Carey et al. (2014) offraient essentiellement le PC à distance à des jeunes de 12 à 17 ans, en modalité individuelle et non intensive, et leurs mesures en post thérapie étaient effectuées au début de la phase IV de maintien du PC. Les résultats pour ce premier objectif pourraient s'expliquer en partie par le fait que plus des trois quarts des adolescentes et adolescents ont signifié être « motivé(e)s » à « très motivé(e)s » face à leur participation à la thérapie intensive de l'AJBQ. Même si cette donnée n'a pas été mesurée avec un questionnaire psychométrique, elle demeure particulièrement importante sur le plan clinique, car elle indique que ces jeunes désiraient investir les efforts et l'énergie nécessaire dans le processus de changement thérapeutique, ce qui est reconnu comme pouvant augmenter l'efficacité de l'intervention (Hearne, Packman, Onslow et Quine, 2008; Rodgers et al., 2021).

Enfin, la présente étude n'est pas la première à s'intéresser à l'efficacité du camp de l'AJBQ pour la clientèle adolescente. Forest (2014) avait constaté une diminution importante du bégaiement chez les six jeunes qui ont formé la cohorte de l'année 2014. Les présents travaux se distinguent de ceux de Forest par le nombre de dossiers étudiés ainsi que par la nature des analyses statistiques effectuées. Les résultats de nos travaux contribuent donc à étayer les évidences selon lesquelles la thérapie intensive de groupe de l'AJBQ serait efficace pour réduire les caractéristiques primaires du bégaiement, à court terme.

Pour le second objectif, en ayant reçu en moyenne 21,03 heures d'intervention adaptée du PC, la majorité des adolescentes et adolescents (64,3 %) ayant participé au camp ont complété la phase II du PC avec un score moyen pour la TF de 2,00 en contexte de parole spontanée. En d'autres mots, la plupart des jeunes ont amorcé la phase III (sur un total de quatre phases). À titre indicatif, selon le manuel du PC (O'Brian et al., 2018), environ 10 à 20 heures, réparties sur plusieurs semaines, sont nécessaires pour les adultes afin de compléter les phases I à III du PC; et quelques heures supplémentaires pour la clientèle adolescente. Par ailleurs, il est surprenant de constater que deux jeunes ont complété la phase III du PC. En effet, rappelons que la durée de la phase III peut être de plusieurs semaines, et celle de la phase IV serait d'au moins 12 mois (O'Brian et al., 2003). Or, l'explication pourrait venir du fait

qu'au moins un de ces deux jeunes bénéficiait de service orthophonique pendant l'année précédant le camp. En somme, en seulement six jours de camp de l'AJBQ, le PC ne peut être complété en entier. Par conséquent, un suivi orthophonique à l'extérieur du camp s'avère nécessaire pour pouvoir achever les quatre phases.

Pour le troisième objectif, comme le montrent les résultats, il n'y a pas de différence statistiquement significative entre le pourcentage de réduction du % SB et de la SEV des adolescents et adolescentes participant pour la première fois comparativement à ceux et celles qui avaient participé à une ou plusieurs éditions antérieures. En d'autres mots, les valeurs de réduction du % SB et de la SEV des nouveaux et nouvelles et des anciens et anciennes sont comparables. Il était attendu qu'une première participation engendre des effets marqués en matière de gains, et que des participations suivantes auraient des gains plus limités, supposant un maintien de l'utilisation de la TF dans le temps. Or, pour différentes raisons, dont le caractère variable du bégaiement (Tichenor et Yaruss, 2021), les personnes qui bégaiant peuvent ne pas être en mesure de maintenir leur TF à certains moments de leur vie (Connery et al., 2020; O'Brian et al., 2018). Il importe d'aborder ce point avec les jeunes et leurs parents lors du camp de l'AJBQ et elles et ils doivent être encouragés à demander le soutien d'une ou un orthophoniste au besoin pendant l'année scolaire. Par ailleurs, l'accessibilité à des services orthophoniques est passablement difficile au Québec. Les listes d'attente sont souvent longues pour les services publics dans la majorité des régions québécoises et les coûts sont généralement élevés pour les services en cabinet privé. Ce manque d'accessibilité aux services pendant l'année scolaire pourrait expliquer en partie le fait que les jeunes reviennent au camp.

Par ailleurs, il est reconnu depuis de nombreuses années qu'il est important d'intervenir non seulement sur les caractéristiques primaires et secondaires du bégaiement, mais également sur les aspects tertiaires liés aux émotions et aux attitudes face au bégaiement chez la clientèle adolescente (Baxter et al., 2015; Beilby, 2014; Fry et al., 2014). Ce type d'intervention intégrée, combinant des éléments de gestion du bégaiement et des aspects affectifs, comportementaux et cognitifs, est recommandé afin de prévenir les impacts nuisibles qui peuvent se développer à travers les années, et ainsi favoriser le mieux-être communicatif et la qualité de vie à long terme des personnes qui bégaiant (Iverach et al., 2017; Iverach et Rapee, 2014; Smith et al., 2014). Que ce soit la thérapie cognitivocomportementale (p. ex. Menzies et al., 2009), la pleine conscience (p. ex. Boyle, 2011) ou la thérapie

d'acceptation et d'engagement (p. ex. Beilby et Byrnes, 2012), les orthophonistes ont accès à de plus en plus de formations pour leur permettre d'intégrer différentes approches à leur intervention sur les aspects tertiaires liés aux émotions et aux attitudes face au bégaiement. En ce sens, les activités d'éducation psychologique du camp de l'AJBQ demeurent essentielles et sont à maintenir lors des éditions futures, voire à diversifier pour mieux répondre aux besoins spécifiques des jeunes. Il serait aussi pertinent de considérer l'ajout de professionnelles et professionnels du domaine psychosocial (p. ex. psychologue, travailleuse ou travailleur social, etc.) à l'équipe du camp afin de profiter de la complémentarité des expertises pour intervenir sur les nombreuses facettes de la vie d'une personne qui bégai.

Limites de l'étude et pistes de recherche

Malgré qu'une partie de l'intervention à la thérapie intensive de fluidité de l'AJBQ porte sur l'éducation psychologique inspirée de la thérapie cognitivocomportementale, la principale limite de l'étude relève du fait qu'aucune donnée relative aux aspects psychosociaux n'a été mesurée de façon systématique. Une des principales barrières à la documentation des attitudes et émotions demeure, encore à ce jour, l'absence d'outils traduits, validés et normés en français. Pour des études futures, il serait pertinent de documenter systématiquement ces aspects, en utilisant, par exemple, l'outil *Overall Assessment of the Speaker's Experience of Stuttering - version pour adolescents* (Yaruss et Quesal, 2006) qui a récemment été traduit et adapté culturellement en français (Leclercq et al., 2019) et qui est disponible depuis 2022 (Stuttering Therapy Resources, 2022). D'autres outils pour évaluer l'anxiété comme l'échelle *Subjective Units of Distress Scale*, suggérée dans le PC, ou l'échelle de peur du jugement négatif d'autrui validée chez les 14 à 19 ans (Monfette et al., 2006; Watson et Friend, 1969) seraient également à considérer.

Une autre limite réside dans le fait que cette étude ne démontre que les effets immédiats de la thérapie intensive de fluidité. En effet, comme il n'y avait pas de mesures prises par l'AJBQ lors des rencontres post-camp (rencontres à un, trois et six mois post thérapie), il n'est pas possible de broser le portrait du bégaiement des adolescentes et adolescents dans leurs contextes de vie quotidienne et l'utilisation de la TF à plus long terme. Ainsi, il serait souhaitable que cet aspect puisse être étudié à l'aide d'un devis prospectif longitudinal, ce qui permettrait de contribuer aux efforts de recherches plus rigoureuses et systématiques pour la clientèle adolescente (Brignell et al., 2020; Hofslundsengen et al., 2022). Ceci permettrait aussi d'éviter les données manquantes propres à un devis rétrospectif comme celui de notre étude et d'inclure

des mesures autorapportées de SEV de même que des questionnaires psychométriques, notamment pour mesurer la motivation. De telles études futures devraient également envisager des mesures visant à atténuer le biais potentiel résultant du fait que les mesures aient été prises par des orthophonistes du camp.

Conclusion

La thérapie intensive de groupe de l'AJBQ, sous la forme de camp de vacances de six jours, montre une diminution significative de la fréquence et de la sévérité du bégaiement. Une future étude comparant les résultats de ce camp avec une thérapie individuelle serait intéressante pour mieux évaluer les bénéfices de la thérapie intensive de groupe et la situer dans le contexte plus étendu des interventions existantes. Enfin, des recherches futures sont nécessaires pour évaluer les effets de ce camp sur les aspects tertiaires du bégaiement comme la présence d'émotions et d'attitudes négatives, voire l'incidence sur la qualité de vie des adolescentes et adolescents qui y participent.

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Note des auteures et des auteurs

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Exploring Kindergarten Teachers' Perception of In-Class Modelling by School-Based Speech-Language Pathologists Through Four Implementation Outcomes



Explorer la perception d'enseignantes de maternelle quant à l'utilisation du modèle en classe par des orthophonistes scolaires au moyen de quatre critères

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INTERACTIVE BOOK
READING

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Abstract

Engaging teachers in professional development programs can be challenging. Modelling could make it easier for teachers to enroll in such programs because observing someone else may be less threatening than being observed and coached. More information on teachers' perceptions of in-class modelling would be useful in school settings as this professional development modality could be relevant when speech-language pathologists support teachers to implement supportive language practices. This study reports the perceptions of 28 kindergarten teachers regarding a professional development program with modelling as its main modality, using interactive book reading to foster language skills. The modelling was delivered by school-based speech-language pathologists in real settings. At the end of the program, the teachers completed a questionnaire which was analyzed quantitatively and qualitatively. The results gave information about four implementation outcomes. Acceptability: The respondents reported a high level of satisfaction with different aspects of modelling. Appropriateness: Respondents perceived relevant impacts of the program on their practices and on the children, with modelling being determinant to assimilate the content. Adoption: Most respondents reported changes in their practices and planned to make more in the upcoming year. Feasibility: Respondents suggested improvements to time-related features (for example, the length of the sessions) and better access to the books used. This study highlights the need for further research on modelling as a professional development modality in projects aiming to foster language skills. Also, being sensitive to the context of their practice settings, school-based speech-language pathologists could consider in-class modelling as a valuable modality when supporting teachers.

Abrégé

Il peut être difficile de faire participer le personnel enseignant à des programmes de développement professionnel. Présenter des modèles en classe pourrait faciliter l'engagement dans de tels programmes, car observer une autre personne est potentiellement moins menaçant que de se faire observer ou superviser. Il serait utile de connaître les perceptions du personnel enseignant quant à l'utilisation du modèle en classe. En effet, ce dernier pourrait s'avérer pertinent pour les orthophonistes scolaires qui accompagnent les enseignants et enseignantes dans l'utilisation de pratiques soutenant le développement langagier des enfants. Cette étude fait état des perceptions de 28 enseignantes de maternelle qui ont pris part à un programme de développement professionnel où le modèle en classe était la composante principale. Ce programme portait sur la lecture interactive dans le but de soutenir le développement langagier des enfants. La présentation du modèle a été donnée par des orthophonistes scolaires dans des milieux de pratiques usuels. À la fin du programme, les enseignantes ont répondu à un questionnaire qui fut analysé quantitativement et qualitativement. Les résultats ont permis de documenter quatre critères. Acceptabilité : Les répondantes ont rapporté un niveau élevé de satisfaction envers les différents aspects du modèle. Pertinence : Les répondantes ont perçu des effets pertinents du programme sur leurs pratiques et sur les enfants. La présentation du modèle s'est avérée déterminante pour s'en approprier le contenu. Adoption : La plupart des répondantes ont déclaré avoir effectué des changements dans leur pratique et en planifier d'autres pour l'année suivante. Faisabilité : Les répondantes ont suggéré des améliorations liées aux aspects temporels (par exemple, la durée des séances) et à l'accès aux livres utilisés. Cette étude souligne l'importance d'étudier davantage le modèle en classe en tant que méthode de développement professionnel dans le cadre de projets visant à améliorer les habiletés langagières des enfants. De plus, selon leur contexte de pratique, les orthophonistes scolaires pourraient considérer le modèle en classe comme une méthode de développement professionnel pertinente pour soutenir le personnel enseignant.

Professional development (PD) programs are offered to teachers with the goal “to improve students’ learning by enhancing teachers’ use of evidence-based approaches to instruction” (Diamond & Powell, 2011, p. 76). In education, PD programs are defined as “in-service training opportunities for teachers who work in center-based childcare” (Egert et al., 2018, p. 3). Meta-analyses suggest that including a coaching component in PD programs is a key factor in improving effectiveness (Egert et al., 2018; Kraft et al., 2018; Markussen-Brown et al., 2017). Although coaching is recognized as being effective, it requires that the trainee is willing to make changes in their practices and to welcome, in the work environment, an outsider who will provide suggestions for improvement. However, achieving readiness for changing practices in educational settings can be challenging (Cook et al., 2019; Moir, 2018). Kraft et al. (2018) discussed this important aspect: “No matter the expertise or enthusiasm of a coach, coaching is unlikely to impact instructional practice if the teachers themselves are not invested in the coaching process” (p. 573).

One major challenge in practice settings is that PD programs that include coaching can be perceived as threatening to teachers’ positive face (Brown & Levinson, 1987) and can provoke resistance in teachers (Jacobs et al., 2018). An alternative, nonthreatening PD modality, such as modelling, could therefore be relevant in such settings. Modelling happens when a trainee observes an expert performing the target behaviour in an ecological context. Even though it is promising, modelling is usually not studied as a stand-alone modality (Schachter, 2015) and has mostly been studied as an optional feature of coaching (e.g., Neuman & Wright, 2010). The present project sought to explore kindergarten teachers’ perceptions of a PD program that features modelling as the main modality, using interactive book reading to foster language skills.

Modelling in Studies on Shared Book Reading

Modelling is sometimes reported in studies on shared book reading as a part of coaching. As an example, in a study by Wasik and Hindman (2011), one session of in-class modelling by coaches was included before coaching sessions for each module of the PD program. The teachers in the experimental group exhibited more improvements in their instructional practices, such as giving feedback to the children on their language, than those in the control group. In a study by Neuman and Wright (2010), modelling was planned to be a part of the coaching condition, but according to the coaches’ self-reports, it was seldom offered. It is possible that when the modelling role of coaches is not explicitly required, coaches may feel more comfortable serving mostly as guides.

Modelling was used as the main PD modality in a study by Wasik and Bond (2001) that sought to increase children’s vocabulary by showing teachers how to stimulate the learning of new words during interactive book reading. The modelling was provided during a 4-week period to two teachers who then continued the intervention that had been modelled. The children with these teachers learned more vocabulary words than those in the group with the two control teachers who engaged in art, craft, and science activities instead. No data were reported on the teachers’ perceptions of the modelling modality itself.

Korth et al. (2010) reported the results of a qualitative analysis of interviews with three teachers who were exposed to emergent literacy activities led by speech-language pathologists (S-LPs). The teachers perceived a positive impact of the S-LPs’ pedagogical approaches on the children’s motivation and performance. Two years after the activities, interviews with two of the three teachers revealed that both wanted to apply the approaches but did this to a different extent, one not as fully as the other. Lack of ready-made materials and time to create their own materials were the reasons given by the teachers for not fully embracing the behaviours modelled by the S-LPs. Complementing modelling with other PD modalities, such as assistance in preparation of materials, could be one way to overcome these obstacles. Furthermore, complementary modalities may add opportunities for teachers to reflect on their practices, which may help improve effectiveness, as PD programs with many components are reported to be more effective than those with fewer components (Markussen-Brown et al., 2017).

Evidence-Based Practice and Practice-Based Evidence for PD Implementation

Previous studies showed the crucial role that translational research can play to reduce the time lag between innovation and clinical uptake (Morris et al., 2011). Knowledge creation is a cycle involving a tailoring of previous knowledge to local context (Graham et al., 2006). The importance of being context sensitive when choosing implementation strategies in educational settings is raised by many authors (M. Curran et al., 2022; Komesidou et al., 2022; Moir, 2018; Owens et al., 2014). In that vein, Lyon and Bruns (2019) said that there is “no implementation without adaptation” (p. 3). Indeed, M. Curran et al. (2022) emphasized that no clinical setting is gathering the ideal conditions under which most intervention research is designed. Therefore, it is up to the research to align with typical conditions in practice settings. For example, Piasta et al. (2017, 2020) found no effect of a large-scale, evidence-based PD program on children’s language and literacy

offered in a real-world context to early childhood educators. They stressed the importance of studying PD programs delivered in real-world contexts to better understand how effectiveness can be achieved and whether it is comparable to the results obtained in research-controlled settings.

In our clinical experience, teachers seldom seek to be coached by S-LPs. In some practice settings, S-LPs offering coaching to teachers may be perceived as going beyond the scope of their practice by “telling teachers how to do their job” (and the subtext of this is that “teachers should know best”). In contrast, in other practice settings, S-LPs offering coaching to teachers is widely recognized and considered part of their normal workload. Although coaching will probably continue to be perceived as the gold standard in effective PD, more information on the impact of modelling would be relevant. Indeed, in school settings S-LPs have opportunities to support teachers as they implement language-enhancing practices by providing in-class modelling. Modelling could be a way to sensitively adapt to contexts where S-LPs are not seen as coaches for whatever reasons inherent to the practice setting’s culture or history. For other S-LPs, who are not yet familiar with the role of supporting teachers in the classroom, as in Tier 1 interventions, in-class modelling could be a gentle path to different kinds of partnership practices with teachers (Heisler & Thousand, 2021).

Potential Distinctive Features of Modelling

The impact of a shared book reading intervention on language development relies on the adult’s mediation of the text, targeting specific language and emergent literacy skills (Piasta, 2015). Modelling appears to be a modality that is favourable to making this explicit to teachers. It also could be perceived as a respectful way of making a realistic proposition of how evidence-based practices should be carried out, as the model intervenes in the teachers’ classroom with all that it involves, for example, behaviour management and space. Modelling could express an implicit respect towards the teachers’ autonomy. Indeed, teachers are free to try and decide how many and which strategies they want to incorporate into their teaching, and to uptake the new practices at their own pace. Besides, in-class modelling requires that the teacher opens the door to the model at a certain time in their schedule and engage by actively paying attention to what is being modelled. This could be an advantage in comparison to other modalities, in which teachers need to plan and perform actions in addition to their usual workload. For example, in Diamond and Powell’s (2011) study, the teachers found it challenging to send video recordings of their teaching to the coach. As a result, some teachers did not send all the planned videos, as

they represented “one more thing” to do in addition to their regular tasks. Finally, in-class modelling has the potential added benefit that it can impact both the teachers’ practices and children’s language skills at the same time. In other PD modalities like coaching and workshops, the benefit for the children is exclusively dependent on the changes that teachers implement in their practices.

More research is needed to understand how modelling is perceived by teachers engaged in PD programs. This modality is so seldom studied as a main modality that it is not listed in the review by Schachter (2015) of 73 studies on various PD modalities in early childhood education. The most frequent modalities found were coaching and workshops. Modalities less often reported include coursework, online resources, online coaching, and communities of practice (Schachter, 2015). In-class modelling has, to our knowledge, been understudied, given its potential advantages as a way to support teachers implementing language-enhancing practices and its relevance in school settings as a way to engage more teachers in PD programs.

Hybrid effectiveness-implementation projects have the potential to give useful information on how to accelerate translation of research results into usual practice conditions (G. M. Curran et al., 2012). Data on both the effectiveness of the intervention and its implementation were collected in the project presented in this article, which used interactive book reading to foster children’s language skills and a PD program using in-class modelling as the main PD modality to improve teachers’ practices. In order to describe and analyze each component in sufficient detail, effectiveness and implementation of the program are presented in distinct articles. The data on the intervention were examined in a previous publication regarding its effectiveness on improving children’s comprehension of text-based inferences, collected on 249 children from 36 kindergarten classes (McMahon-Morin et al., 2021). The results showed a significant difference in the improvement of referential inferences’ comprehension for the intervention group and delayed intervention group in comparison with an active control group. A significant difference was also found regarding the improvement of comprehension of causal inferences for the intervention group compared with the active control group (McMahon-Morin et al., 2021). This intervention and the PD program that accompanied it were delivered by S-LPs, in usual practice conditions (i.e., not research-controlled conditions). It included diverse PD modalities, such as in-class modelling, workshops, and an online community of practice. Nonetheless, the main PD modality was in-class modelling.

This intervention has therefore the potential to shed some light on teachers' perceptions of modelling, which is the subject of this article.

The Present Study

The present study lays groundwork for a forthcoming study on interactive book reading, where modelling will be used as the main PD modality, without coaching. The goal of the present study is to gather information about the teachers' perceptions of modelling. For this purpose, we used the implementation outcomes terminology by Proctor et al. (2011). Four outcomes were examined and constituted the basis for the research questions: acceptability, appropriateness, adoption, and feasibility. First, *acceptability* is defined as "the perception among implementation stakeholders that a given treatment, service, practice, or innovation is agreeable, palatable, or satisfactory" (Proctor et al., 2011, p. 67). Second, *appropriateness*, although being close to the acceptability concept, refers more to the fit between the innovation or a given practice and its potential to meet certain expectations or to solve a problem. Proctor et al. (2011) made the distinction between those two concepts, as a practice could be seen as relevant for a situation (appropriate) while also being viewed as difficult to implement (not acceptable). On the contrary, a certain practice could be seen as acceptable to implement but not relevant to impact a certain problem. Third, *adoption*, also called uptake, is "the intention, initial decision, or action to try or employ an innovation or evidence-based practice" (Proctor et al., 2011, p. 69). Fourth, *feasibility* is usually examined a posteriori, as the success or the failure with which an innovation was carried out in the setting.

Based on those terminological concepts, the research questions are

1. Are the respondents satisfied regarding the PD program and the modalities used to deliver it? (Acceptability)
2. Do the respondents perceive that the PD program achieved relevant impacts for them and/or the children in their class? (Appropriateness)
3. Do the respondents report actual or planned changes in their practices following the PD program? (Adoption)
4. Do the respondents have suggestions to improve how the PD program was carried out? (Feasibility)

Answering these questions will help to explore if, how, and why modelling should be considered as a PD modality in future clinical projects and future research.

Method

This study originated out of a clinical project conducted in a school setting in the 2016–2017 school year at the Val-des-Cerfs School Service Centre in Québec. Four S-LPs developed an interactive book reading intervention that was delivered in kindergarten classrooms in low socioeconomic settings, alongside an offering of various PD modalities to the teachers, in-class modelling being the main one. The schools were chosen due to their low socioeconomic index according to Québec's system—based on the mother's education and the parents' employment situation (Ministère de l'Éducation et de l'Enseignement supérieur, n.d.). One of the S-LPs (the first author) sought the approval of the School Service Centre to analyze the data beyond the clinical project's initial scope. The protocol and consent forms were approved by the Ethics Committee of the Centre for Interdisciplinary Research in Rehabilitation of Greater Montréal.

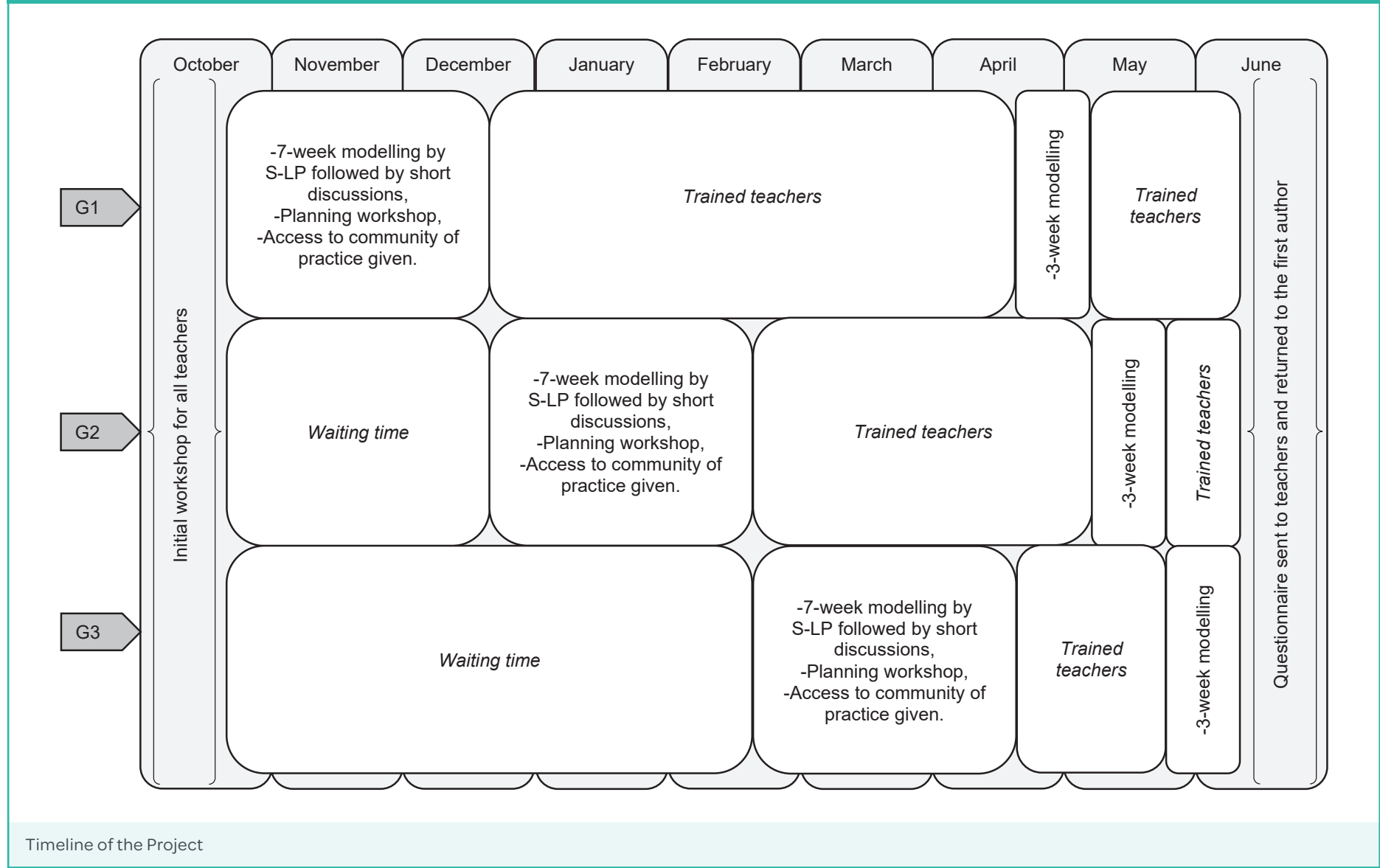
Participants and Procedure

Thirty-six teachers of kindergarten classes (all children were 5 years old by October 1) and two teachers of prekindergarten classes (all children were 4 years old by October 1) were automatically included, as they were teaching in the 12 schools where the clinical project took place. Although participation in the original clinical project was not voluntary, the teachers were invited to fill a questionnaire voluntarily and anonymously, for research purposes, at the end of the school year, in June. As this questionnaire was not planned in the original clinical project and was added afterwards, a preintervention questionnaire was not administered. This study thus used a one-group posttest-only quasi-experimental design. The questionnaire was sent through the School Service Centre's internal mail and an anonymous participant code was attributed to each based on the order in which they were returned. Twenty-nine questionnaires were returned, but one was excluded as the respondent wrote that she had replaced a teacher who retired during the school year and consequently was unable to answer most of the questions. Twenty-eight questionnaires were retained for analysis, representing 74% of the participants in the clinical project.

Design and Content of the Clinical Project

The classrooms were clustered within schools, which were then organized into three groups according to geographical location. Groups were randomly assigned to one of the three moments in the year when they would receive the modelling of the interactive book reading in their class: The first started in October, the second in December, and the last in February. **Figure 1** presents the timeline

Figure 1



Note. G1 (2, 3) = Group 1 (2, 3); S-LP = speech-language pathologist.

of the project. Ten respondents were in Group 1, seven in Group 2, and 11 in Group 3.

Two S-LPs delivered the PD program. Both had 4 years of experience and had worked as school-based S-LPs since becoming certified. They attended a 2-day PD workshop on interactive book reading (Lefebvre, 2016) before the project began. Two other S-LPs provided part-time support in parts of the project not related to the PD program (e.g., testing children's inference skills).

Including many modalities is recommended to increase effectiveness of a PD program as it provides different contexts in which teachers can reflect on their practices (Markussen-Brown et al., 2017). In accordance with this, the two S-LPs embedded different modalities over the course of the project. However, coaching was deliberately excluded, because teachers were included in the clinical project based on their schools' low socioeconomic index rather than based on their personal interest. As well, teachers had been made aware of the clinical project only at the beginning of the school year and the S-LPs felt that requiring adaptations to the class schedule was a heavy enough constraint to impose on teachers at such short notice. Finally, this project was the first one in the practice settings where S-LPs took an active role in Tier 1 intervention and anticipating the reactions of teachers to S-LPs assuming this role was difficult. The different PD modalities are described below.

Initial Workshop

All the teachers participated in a half-day workshop at the start of the project. The workshop was divided into three parts. First, the S-LPs presented the project and the interactive book reading approach. The second part involved a demonstration with a book that would be used during the upcoming modelling phase. Last, the teachers constructed their schedule within a time slot attributed to their school throughout the year.

Modelling: 10-Week Interactive Book Reading

Each S-LP was assigned to some schools in each group and performed the interactive book reading intervention in the classroom, thereby serving as a model for the teachers. The sessions lasted 30 min and took place three times per week. All the teachers attended the sessions in an observer role. The 10-week intervention was divided in two parts. The first one lasted 7 weeks, beginning either in October, December, or February. The S-LPs then returned to all the classrooms to offer a refresher modelling intervention for 3 weeks during April to June.

The intervention was adapted from the proposal of Lefebvre et al. (2011). In each book, the S-LP targeted the same three causal inferences, one referential inference, three novel vocabulary words, and one print concept. The book was read three times over the course of 1 week, following a procedure that was explicit-teaching based (Archer & Hughes, 2011; Lefebvre et al., 2012; van de Pol et al., 2010). The first reading was dedicated to modelling the targets to the children, the second to guided practice, and the third to (more) independent practice. The S-LPs used Van Kleeck's (2008) "think aloud" strategy during the readings as well as embedded interactive discussion and meaningful gestures to scaffold the children's inference and vocabulary comprehension (Coyne et al., 2009; Justice & Kaderavek, 2004; Pesco & Gagné, 2017; Wood et al., 1976). For more information on the intervention and details on books used, see McMahon-Morin et al. (2021).

To ensure the fidelity of the intervention, both S-LPs used the same books and developed the interactive book reading plannings together. Not only did they target the same words, the same inferences, and the same print concept in each book, but they also provided the same explanations and definitions for those targets, as verbatims were collaboratively developed and included in the plannings. As well, the S-LPs coached each other, observing one another holding interactive book reading sessions for 6 days over the course of the year, representing a total of 19 interactive book reading sessions for each S-LP. They gave each other feedback to ensure that they delivered the intervention in the same manner.

Short Discussions

Short periods for discussion of approximately 5 min per teacher were planned after each interactive book reading session to discuss what had happened during the session (e.g., the response of a particular child). This was the modality delivered with the most variation because of the S-LPs' tight schedules. Some discussions were held systematically after every session, sometimes in the presence of the children who were eating a snack or in the schoolyard, and sometimes when the children were not present. In some schools, teachers preferred to have one somewhat longer discussion (around 30 min) per week without the children present. In other schools, some meetings were simply not held as the teachers were not available or did not feel the need for them after the first few weeks.

Planning Workshop

During the 4th week of the 7-week modelling phase, the teachers took part in a 1-day planning workshop with the S-LP. The workshop was delivered to teams of teachers from one

to three schools at a time, representing three to 10 teachers. The morning was dedicated to a review of the theory (e.g., the different types of inferences, the link between oral and written language). The teachers discussed concrete examples of what happened in the classroom during the modelling phase and took the opportunity to talk with their colleagues from other schools. The afternoon was dedicated to providing assistance to teachers in planning interactive book reading. They brought books from their classrooms that they wanted to read to the children and developed one or two interactive book reading plans around those books. The S-LP circulated among them, giving the teachers support, for example, on how to recognize inferences and choose relevant targets for vocabulary words.

Community of Practice

An online community of practice was developed on the Outlook platform (<http://outlook.office.com>). The teachers were given access to the community of practice when the modelling phase began in their classrooms. At first it was designed to let the teachers talk to the S-LPs when they were no longer receiving modelling, but in the end, it was never used this way. Rather, the S-LPs used it to share the interactive book reading plans created by the teachers in the planning workshops to all teachers in the project. Thus, by the end of the school year, interactive book reading plans for more than 40 books were available, which could be considerably supportive for teachers in reducing the preparation time to implement their own interactive book reading sessions. In addition, the S-LPs sent short publications (a dozen during the school year) to all the members, summarizing an aspect of the interactive book reading or responding to teachers' questions that emerged when the S-LPs discussed with teachers during the different PD modalities.

Although many modalities were used to deliver the PD program, we consider in-class modelling to be the one that carried the most weight as it was the most frequent, had the longest total duration, and lasted over an extended period of time.

Questionnaire

An exploratory questionnaire of 18 questions was developed based on previous work by the research team (Croteau et al., 2017) and through discussions on aligning the content with the PD program being implemented. The questionnaire was designed to be completed in approximately 15 min, with questions that used a five-point Likert scale and open-ended questions that could be answered with a short sentence. Three questions gathered information on the participants' characteristics

regarding their teaching experience, their group (the one starting in October, December, or February), and their previous knowledge on interactive book reading. Five questions targeted the teachers' level of satisfaction with each PD modality and its importance in the program's content. Four questions concerned the perceived impact of the PD program on their teaching and the impact of the intervention on their pupils. Two questions dealt with the actual reported changes in practices and those that teachers planned to implement during the next school year. Two questions asked whether teachers would need something else to facilitate the knowledge transfer and what they would view as the next step in the project. Finally, one question asked about their general experience over the school year. The questionnaire used scales and open questions which allowed us to have a mixed methods approach, with a convergent design as described by Creswell and Plano Clark (2017). In this type of design, both quantitative and qualitative data are collected in a parallel manner and the results are integrated together to deepen the comprehension of the subject of the study.

Analysis

Quantitative analysis was performed on the questions using a five-point Likert scale: for the questions regarding satisfaction, 1 = *not satisfied* to 5 = *very satisfied*; for the questions on the intervention's impact on their teaching and pupils, 1 = *totally disagree* to 5 = *totally agree*. Statistical treatment included paired samples *t* tests and independent sample *t* tests because of their ability to identify small effects using five-point Likert items (de Winter & Dodou, 2010).

The open-ended questions (i.e., actual and planned changes of practice, the needs for additional support, the next steps in the project, and the general experience) were analyzed qualitatively with a thematic analysis embracing the six phases suggested by Braun and Clarke (2022). As it was an exploratory study, the analysis was performed inductively at first, not to limit the findings in any way. Although we present the phases in order, they overlapped, and sometimes they were performed iteratively throughout the process as is expected in qualitative analysis (Braun & Clarke, 2022). First, repeated reading of the answers allowed the first and third authors to get accustomed to the data. Second, the third author went systematically through each text segment representing an idea and developed codes.

Teachers wrote very short answers of few words to questions about changes in their practices and therefore, qualitative analysis could not be further performed on their answers. The codes were used instead to develop

a simple categorization carried out by the first and third authors. Those categories were organized in a frequency table and treated as quantitative data. For the questions regarding needs for additional support, next steps in the project, and the general experience, teachers answered with full sentences, providing richer data that could lead to a deeper analysis. Those answers were further analyzed in the subsequent phases of the analysis.

In the third phase, the third author generated ideas of general themes, sometimes promoting a code as a theme in itself. The first and third authors performed iteratively the second and third phases to refine and develop the organisation of the coding, which led to the refinement of the coding in the fourth phase, achieved through discussion between the first and third authors. In the fifth phase, the precision and final definition of themes was performed collaboratively through iterative discussions between the first, third, and fourth authors. As well, the themes were revisited with a more deductive approach, through the “interpretative lens” (Braun & Clarke, 2022, p. 57) of the four implementation outcomes. A natural fit was observed between the themes developed inductively, each one of them fitting within the scope of one outcome. The implementation outcomes were then used as overarching themes, framing the relation between the themes

developed inductively. Sixth, vivid excerpts to represent each category were selected. The original verbatim transcripts are in French, and selected excerpts were translated into English for the purposes of this article.

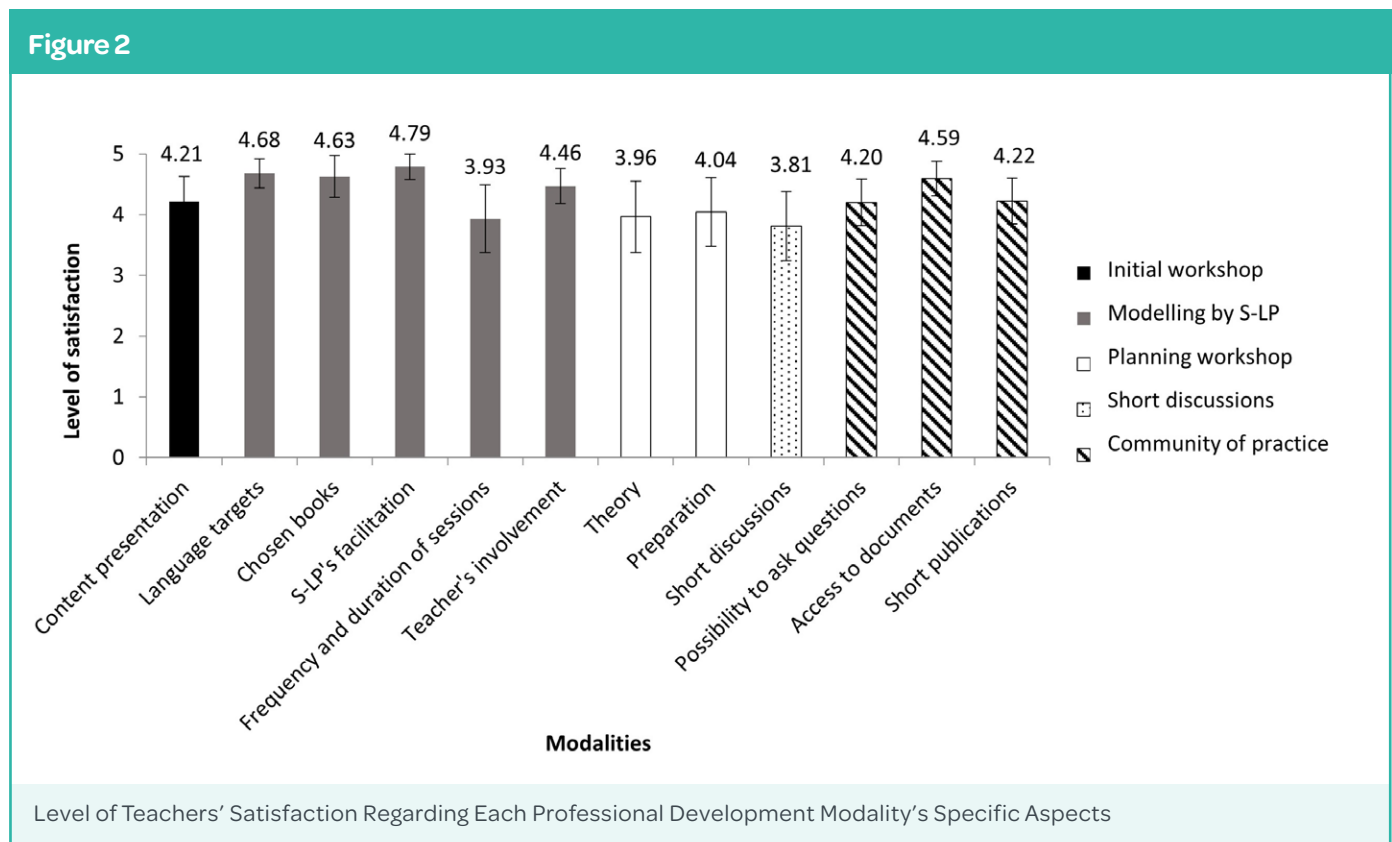
Results

All 28 respondents were women. Three teachers had 5 years of experience or less, five had between 6 and 10 years of experience, seven between 11 and 20 years, and 13 teachers had more than 20 years of experience. Nine teachers reported that they had knowledge of interactive book reading before the start of the project, and 19 reported not having prior knowledge. All had a bachelor’s degree, as this is a requirement to obtaining a license to teach in Québec. The quantitative results are presented first, followed by the qualitative analysis findings. The four terminological concepts are used as a guide to organize the results’ presentation.

Quantitative Results

Acceptability

Figure 2 presents levels of satisfaction with each PD modality’s specific characteristics. Mean satisfaction was 4.23 points, located on the continuum between *satisfied* and *very satisfied*.



Note. S-LP = speech-language pathologist.

The S-LPs' facilitation during the interactive book reading received the highest level of satisfaction with the smallest standard deviation. Very high levels of satisfaction were also found with the language aspects targeted in the reading and the books chosen by the S-LPs, all three items being related to the in-class modelling modality.

Appropriateness

One question asked the respondents to designate the PD modality or modalities that were most determinant in assimilation of the content. Teachers had to choose a minimum of one modality to a maximum of five (all modalities). The 28 respondents chose on average 2.54 modalities ($SD = 1.14$), using the whole range of possible choices (1 to 5). Twenty-seven teachers (96%) designated the modelling by S-LPs in the classroom as determinant in their assimilation of the content. This was followed by the planning workshop, which was selected by 15 respondents (54%); the initial workshop, by 13 respondents (46%); the short discussions, by 9 respondents (32%); and last, the community of practice, selected by 7 respondents (25%). In-class modelling in the classroom was chosen significantly more often than all the other modalities: initial workshop ($t(4.58) = 27, p < .001$), planning workshop ($t(4.58) = 27, p < .001$), short discussions ($t(6.97) = 27, p < .001$) and community of practice ($t(8.22) = 27, p < .001$). All p values were below the Bonferroni corrected alpha (.0125).

All 28 teachers responded to the question on the impact of the PD program. The results were situated on a continuum from *agree* (4 points) to *totally agree* (5 points). The teachers agreed to the same extent that the project had an impact on their pupils' participation in book reading and their interest in reading, with a mean of 4.43 ($SD = 0.63$).

Adoption

Regarding the adoption of the scaffolding strategies, the teachers agreed that they used the strategies modelled by the S-LP in their book reading with a mean of 4.46 ($SD = 0.51$) and agreed that they used those strategies in their general teaching, with a somewhat lower mean of 4.04 ($SD = 0.64$). Twenty-four teachers reported that they implemented changes in their practices (86%) and four mentioned not having made any changes (14%). Moreover, 26 teachers planned to make changes in their practices in the next year (93%) and two reported not planning any further changes in the future (7%). Teachers reported various aspects of interactive book reading as implemented or planned changes in their practices. **Table 1** presents the number of responses in each category on actual and planned changes in practices.

Qualitative Results

Nine teachers responded to the question regarding needs for additional support. Twenty teachers responded to the question regarding next steps in the project. All the respondents answered the question about general experience. Responses to all questions were pooled together and analyzed as a single corpus.

Acceptability: A General Positive Experience

The responses about the general experience with the project were brief comments that expressed appreciation, enjoyment, interest in, or gratitude for the project, such as, "Thank you for this beautiful experience!" (P24) and "Very agreeable and very enriching!" (P1). Three teachers expressed a reluctance at the beginning of the project, but they came around during the year, for example, "With

Categories	Number of responses on	
	Actual changes	Planned changes
Language targets	13	5
Scaffolding strategies	12	0
Ways to engage pupils in reading	5	0
Structure of the interactive book reading	3	9
Reading intention	2	1
Book choice	1	0

Note. Teachers could report changes, actual or planned, under more than one category.

some reluctance at the beginning, I reconsidered, and I liked the project a lot" (P28). Other comments expressed the appreciation of the S-LP the teachers worked with, explicitly mentioning the S-LP by name: "[Name of the S-LP]: any time! [happy face]" (P14), or being more specific about their appreciation, such as, "She is an important reading resource" (P11).

Appropriateness: Benefits for Everyone!

Some teachers reported that the project provided them with a new way to read books which they embraced, for example, "It allowed me to further develop how I teach comprehension through stories" (P3) and "I adhere to this way of teaching!" (P5). It should be noted that one quotation was oriented more towards adoption outcome, the participant speaking of the opportunity to learn new practices from the S-LP: "I learned a lot by watching [name of the S-LP] reading" (P10).

Other comments were specific about the impact for the children, as perceived by teachers, such as specific learning: "The children acquired nice concepts. To read from left to right: Wow!" (P5) or more general competencies, for example, "[The children] are more aware of the importance of understanding what we read" (P19). Some comments expressed surprise about unexpected learning by children with difficulties, for instance, "I am pleasantly surprised with the achievements of the children with the greatest difficulties" (P27) and "Some of them revealed themselves to me during these sessions" (P7). Comments describing the children's increased participation were also specific: "The children asked more questions" (P19) or more general: "The children were active during the reading" (P7). The teachers commented on the project increasing the pupils' interest in reading, for instance, "I am amazed by the children's interest" (P20). One teacher mentioned that this interest would be beneficial for children in Grade 1: "I found that the children felt competent, and it was rewarding. Their interest in reading will be fostered for Grade 1" (P23).

The participants expressed that this approach should be offered to more children. Some teachers expressed that the project should go on with kindergartners in the next year, for instance, "Do it again with the new kindergarten children" (P14). One (P17) mentioned that all kindergartners should have access to this project (i.e., not only those from low socioeconomic settings). Those who mentioned that the project should go on with the same pupils in first grade commented on the aspect of continuation, for example, "but also to pursue it with the first-grade pupils. Continue with their learning" (P5). Other teachers said that in the future, the S-LPs should pay more attention to children

experiencing difficulties, for example, "It would be good if the S-LPs had time to work with small groups of children experiencing difficulties in applying the different steps of the project (1st day, tell the story; 2nd day, recognizing mistakes; etc.)" (P3). One teacher referred explicitly to the second tier of the response to intervention model: "More teaching on the 2nd tier for children in need" (P25).

Feasibility: Changes Could Make It Easier

Three subthemes related to improving the feasibility of the project: better access to books, time is central!, and increase teachers' involvement.

Better Access to Books. Even though the books were available at the School Service Centre's central library, some teachers commented that they would have liked to have access to the books in their school or in their classroom, for example, "To have the books available to me" (P13). One teacher (P28) mentioned that a budget to buy the books would have been necessary.

Time is Central! Teachers expressed schedule challenges they experienced, both for themselves, for example, "Constraining in the schedule ... For classroom management, it was more difficult" (P21), and for their pupils, for instance, "Moments should be better chosen to suit the children's needs, their energy level during the day" (P4). Comments identified problems without suggesting solutions, all pointing at a different problematic aspect of the schedule: the length and the time during the year of the first 7-week modelling phase, the time of year for the 3-week modelling phase, the length of each session, and the frequency of sessions per week. Three teachers explicitly referred to the children's ability to adapt to those time issues, for example, "I felt that the children were less receptive in May and June" (P19).

Some teachers said that they would like to have had time to plan more interactive book reading sessions, for example, "I would have liked to plan other interactive book reading sessions with the S-LP" (P7), and others mentioned that this time would be used to link the interactive book reading to other themes covered in the classroom. One teacher expressed the need for more PD on print and phonological awareness: "I would have liked more workshops on writing (during the morning message, pretend play). More phonological awareness please" (P24). Finally, the teachers who wanted to practice the actual facilitation of interactive book reading referred to the need for time as a work in progress, for example, "More time to practice and experience it regularly in my class will help me become more skilled at leading interactive book reading" (P11) and

"I consider that I am still in an acquisition phase [of the project]" (P6).

Increased Teachers' Involvement. One teacher (P4) commented that she would like to be more involved in the future, and that what was done regarding that issue during the project was not enough. Another teacher who suggested becoming more involved was referring to an aspect of the coaching as a continuation of the project: "I want to continue with [name of the S-LP]. Facilitation in the classroom and in team (she can give me her feedback)" (P11).

Discussion

This study explored the perceptions of 28 teachers on in-class modelling through the lens of four implementation outcomes: acceptability, appropriateness, adoption, and feasibility. In-class modelling was the main PD modality of a PD program using interactive book reading to foster language skills in kindergarten children. This project was delivered in a real practice setting under the usual practice conditions. This aspect of the study is important, as the teachers participating in the clinical project were not selected based on their personal interest but on their school's low socioeconomic index. Only after the PD program did they complete the questionnaire on a voluntary basis for research purposes. The teachers were not in ideal conditions: For example, they were made aware of the project taking place in their class only at the beginning of the school year (i.e., not through a collaborative process of preparation in advance). The respondents reflect the usual readiness (or a lack thereof, for some of them) that is reported in the implementation sciences literature (e.g., Moir, 2018).

The quantitative and qualitative results were convergent and complementary on the four implementation outcomes. The findings are summarized for each outcome as a way to present the integration of both quantitative and qualitative results (Creswell & Plano Clark, 2017). Then, the discussion explores if, how, and why modelling should be considered as a PD modality in future clinical projects and future research.

Integrative Summary of the Quantitative and Qualitative Findings

First regarding the acceptability outcome, using modelling as a main PD modality appeared to help achieve a high level of satisfaction among teachers, as reported in the quantitative results. Complementary to those results, the qualitative analysis revealed that teachers experienced the project and the relationship with the S-LP they worked with as enjoyable. Second, regarding the appropriateness outcome, in the quantitative results, participants chose modelling the most

frequently as a PD modality that helped them in assimilation of the content of the PD program. Nonetheless, participating in a diversity of PD modalities also seemed to be determinant in assimilation of the content, which reflects previous findings (Markussen-Brown et al., 2017), and should be considered when using in-class modelling. Quantitative and qualitative results were convergent about the respondents perceiving positive impacts of the clinical project on their pupils' participation, interest in reading, and learning. In the qualitative results, the teachers expressed that many different children should have access to this approach. Third, regarding the adoption outcome, the quantitative results indicated that 86% of the respondents reported changes in their practice on diverse aspects of the interactive book reading and 93% planned to implement further changes, which suggested that the respondents were eager to adopt some practices modelled by the S-LPs. Finally, the qualitative analysis revealed many areas that could improve the feasibility according to the respondents. Teachers suggested improvements mostly regarding the schedule and access to the books. They also said they needed more time to uptake the content of the project.

Modelling as an Accessible and Acceptable Modality

The results lead us to suggest that in-class modelling is a PD modality that warrants further research and could be considered by school-based S-LPs in some practice settings. Currently, modelling may or may not be included in some studies that use coaching, and this is not always clear in the descriptions provided by authors (Schachter, 2015). Based on our results, we suggest that modelling should be studied as a PD modality in its own right as a way to improve supportive language practices in school settings. Indeed, we believe this would have important clinical implications as S-LPs have opportunities to provide in-class modelling. Even if coaching remains the gold standard, important implementation challenges often prevent S-LPs (or other professionals) from offering coaching to a large proportion of teachers (Cordingley & Buckler, 2012). As Schachter (2015) put it, "The narrow focus on coaching may prevent researchers from exploring other formats and designs, particularly designs that are more feasible and less costly to implement" (p. 1016).

Hypotheses on Modelling's Distinctive Features

One advantage of in-class modelling that may have contributed to its acceptability is its nonthreatening aspect, where the expert puts themselves "at risk" instead of placing the trainee under a spotlight. This aspect probably contributed to the fact that teachers described the project as satisfying and agreeable in the general positive

experience theme. In this project, some teachers initially openly expressed that they did not see how S-LPs could show them something about “how to read stories to children,” as they felt it was a simple thing that they were already doing every day. In that sense, the project did not address a need expressed by the teachers, even if a majority of the respondents reported not having previous knowledge on interactive book reading. However, studies have reported low levels of instruction in language and literacy areas among childhood educators/teachers, and a low level of related knowledge (Cunningham et al., 2009; Schachter et al., 2016). Perhaps working only on the needs expressed by teachers in a real-world context would result in PD programs missing important areas of potential improvement. Coaching, even if it is seen as a component that enables more effective PD programs (e.g., Kraft et al., 2018), would probably have been perceived by teachers as threatening or invasive in this context. In the qualitative results, some teachers expressed that they were reluctant at the beginning of the project but eventually overcame this, and some expressed surprise at some impacts they perceived on their pupils. The nonthreatening aspect of modelling might have contributed to this change of heart among those teachers. This could also be an advantage as it could lay a path for further collaborative work that could then include coaching. Indeed, one teacher stated that she would like to obtain feedback from the S-LP as the next step in the program.

The fact that the modelling was offered over an extended period was probably a factor of success, as teachers need time and intensive support to change and improve their practices (Piasta et al., 2012; Sailors & Price, 2015). A hypothetical advantage that would need further attention is that a sustained period of modelling may help develop a stronger relationship between the pupils and the model, which could therefore more extensively demonstrate important features of the interaction that supports the children’s participation and learning as their learning progressed over the weeks. Indeed, some teachers expressed surprise over unanticipated learning by children with difficulties, which might not have been possible if the in-class modelling had been provided only during a short period.

A sustained modelling period could also enable development of a link between the teacher and the model. In their comments, some teachers expressed a personal appreciation of the S-LP they worked with, which probably contributed to the acceptability of modelling. Sailors and Price (2015) showed that the interaction between coaches and teachers matters in the improvement of teachers’ practices, and it is likely that the same principle applies

to the interaction between models and teachers. Further research should address what could be the qualities of effective models, as the qualities of coaches have already been described in previous research (e.g., Piasta et al., 2017).

All the areas for improvement were related in some way to time-related issues, all regarding different parameters, which should also be considered in future use of modelling and in future studies. It would appear that helping many teachers at once presents a challenge in terms of making the schedule satisfying for everyone, as each teacher may have different preferences. Although modelling could be conceived as less demanding than other modalities in terms of the actions that teachers need to take, opening the door to the model still requires teachers to adapt their daily routines, which is demanding and should be acknowledged. Finally, better access to the books can also be conceived as a time issue. To order those books at the School Service Centre’s central library and find the related planning on the community of practice might have been “one thing too many,” resulting in the perception that the accessibility of those books was a problem. Time issues should be carefully taken in consideration when choosing modelling in clinical settings to increase the feasibility, and this aspect and should be further studied.

Future Research

We suggest that the next step in research should be to perform video analysis to study the capacity of in-class modelling to change teachers’ practices. As well, semistructured interviews could be suitable to better understand how this process of changing practice happens when one has mostly an observer role while the intervention unfolds. Further research is currently ongoing on that matter.

Eventually, further studies could compare coaching to modelling to reveal their respective advantages, as has been done in previous studies comparing the respective advantages of coursework and coaching (Neuman & Wright, 2010). Further investigation is needed to reveal the active ingredients of coaching (Neuman & Wright, 2010). Modelling may eventually appear as an active ingredient of effective coaching, so future studies could measure the additional benefit of modelling in coaching, in the same manner that a previous study addressed the additional benefit of coaching to coursework (Rezzonico et al., 2015). The literature discusses the cost/effect of coaching, and this should be taken into account while further untangling the respective advantages of coaching and modelling: In modelling, the model, who has expertise in the area targeted by the PD program, interacts directly with the children and can already provoke improvements in children, as was the case in this

project (McMahon-Morin et al., 2021) and this should be counted in its benefits.

Another area of research that should be further studied is the perception of school-based S-LPs regarding being in the model role. As reported by Neuman and Wright (2010), coaches themselves might prefer being a coach than a model. Indeed, it is possible that for some S-LPs, putting themselves “under the spotlight” in the model role feels risky and therefore they might prefer acting as coach. In a study by Campbell et al. (2016), 91 Canadian school-based S-LPs took part in a survey on their role in inclusive education. They reported a low level of confidence in their skills to plan and lead an activity in the classroom that would address the needs of all children in the class. The S-LPs’ perceptions of acting as a model in class should be explored in further research and a project on that matter is in preparation. It is however encouraging that S-LPs with limited experience could implement a new intervention in their practice setting with positive results, suggesting that this type of approach is within reach for most professionals.

Limitations

Nine teachers out of the 38 involved in the project did not respond, and we cannot know why. They may have been less satisfied than those who did respond, or the time of the year to answer the questionnaire might not have been suitable. Teachers responded to the questionnaire in June but had the project in their class at different times of the year. As a result, some teachers had more time than others to put in practice the content of the PD program before answering the questionnaire. Given the one-group posttest-only quasi-experimental design, it is not possible to make comparison with the perspective teachers had prior to the project. Had we had this opportunity, deeper understanding of the potential changes in the teachers’ perceptions could have been achieved and put in relation with teachers’ expectations prior to the project. In future projects, questionnaires should be developed to be administered as pre- and postmeasures. Although the questionnaire was based on previous work, the current version was not validated or piloted prior to sending it to teachers due to the time constraints of this clinical project. As well, the content was aligned with the PD program offered. These results should be interpreted with care when considering other PD programs. Finally, our questionnaire enabled us to gather both quantitative and qualitative data in a timely fashion. However, having only one source of data in mixed methods tends to limit the extent of both types of information that are collected (Creswell & Plano Clark, 2017). Future studies relying on mixed methods could combine quantitative and qualitative data collected from different sources.

Conclusion

In this exploratory study, 28 teachers participated in a clinical project delivered in a real-world setting using interactive book reading to foster language skills. In-class modelling was examined through the lens of four implementation outcomes: acceptability, appropriateness, adoption, and feasibility. Results suggested that in-class modelling was experienced as agreeable, and teachers reported a high level of satisfaction toward the in-class modelling. Modelling offered with complementary PD modalities appeared to be a key ingredient for the teachers to assimilate the content of the PD program. The teachers perceived positive impacts on their teaching as well as on their pupils. The respondents reported actual or planned changes in their practices following their participation in the PD program. Careful attention should be paid to time features in such projects as a way to enhance the feasibility of projects using in-class modelling. Future research should continue to explore the use of in-class modelling to uncover the potential benefits of this modality in PD programs delivered in different contexts and settings. This research would help S-LPs better support teachers as they implement supportive language practices in kindergarten classes.

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