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Assessing Inclusion Quality: The SpecialLink Early Childhood Inclusion Quality Scale

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Abstract

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Cover Page Footnote

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Abstract

Recent advances in policy development and professional practice in the field of early learning and child care have led to the expectation that it is appropriate and advantageous to include children with disabilities and extra support needs in early child care and learning programs. Yet, to date, evidence-based research on the effects of experiences in inclusive programs has been hampered by the lack of appropriate measures to assess inclusion quality that are reliable, valid, and relatively easy to administer. The purpose of the current study was to examine a newer measure, the SpeciaLink Early Childhood Inclusion Quality Scale (SECIQS), using data from 588 classrooms in child care centres and preschool programs across Canada. Through examination of inter-item consistency and reliability, along with exploratory and confirmatory factor analyses, evidence is provided for the utility and reliability of the measure. In addition, the validity of using both subscales is supported. Implications for policy and practice include recommending the use of all items in the SECIQS and scoring for all three factors in research studies. Further, separate subscale scores for the Inclusion Principles and Inclusion Practices subscales are recommended as useful for centre assessments, quality improvement initiatives, and for educating the field about the contributors to inclusion effectiveness.

Well developed systems of high quality early learning and child care are increasingly recognized for the contributions they make to children's learning and development and parental employment, as well as to the promotion of social inclusion and neighbourhood cohesion (Canadian Council on Learning, 2008; Friendly & Lero, 2005; Organisation for Economic Co-operation and Development, 2006). While there is no single definition of high quality child care throughout North America, some overall elements of the programs have been identified as crucial to the well-being of children (Buysse, Skinner, & Grant, 2001; Forry, Simkin, Wheeler, & Bock, 2013). These elements include providing a wide range of learning and development goals for children that reach far beyond academic subjects, such as a focus on early literacy and numeracy to social, emotional, cultural, artistic, and physical goals. High quality child care programs approach education with the notion that children can learn through play while experiencing a wide range of artistic, cultural, cognitive, social, and physical activities (Childcare Resource and Research Unit & Canadian Union of Postal Workers, n.d.). Some such elements can be captured through qualitative and mixed-methods inquiry; however, closed-ended questionnaires and observational tools are more commonly engaged to rate and assess child care quality, including inclusion (Fenech, Sweller, & Harrison, 2010; Forry et al., 2013)

It is well documented that the early years are crucial for building the foundations of learning and wellness needed for success in school and later in life. Brain development is rapid in the first years of a child's life and the experiences they have during this time contribute to the progression of this development. Children with disabilities and extra support needs benefit from rich learning experiences, parallel to their typically developing peers. Inclusion for children with disabilities is part of the provincial, national, and international landscape on human rights (Bancroft & Underwood, 2015); but is also part of an intersectional conversation in which wider diversities such as ethnicity and culture are impactful (Underwood, 2012). Learning through play and having the opportunity to engage and interact with their typically developing peers is critical to support their rapid brain development (U.S. Department of Health and Human Services & U.S. Department of Education, 2015). In response to the growing need for access to early childhood education and care (ECEC) programs, research has demonstrated the value of high quality early childhood programs for all children—particularly for disadvantaged and at-risk children—as a form of early intervention and as a vehicle for enhancing children's language ability, social skills, and school readiness (e.g., Barnett, 2008; Boyd, Odom, Humphreys, & Sam, 2010; Howes, 2003; Lamb, 1998; LaParo & Pianta, 2000; McCartney, 2004): all important components for children's adjustment to elementary school and their later academic success. The proviso that the programs are of high quality is crucial (McCartney, Dearing, Taylor, & Bub, 2007), as experiences in poor quality care settings can be problematic for all children, including those at risk of poor educational and/or social outcomes (Burchinal & Cryer, 2003). Furthermore, experiences in poor quality care settings can be problematic both for children at risk of poor educational or social outcomes and children at low risk (Loeb, Fuller, Kagan, & Carrol, 2004; Peisner-Feinberg & Burchinal, 1997). Finally, and very importantly, participation in high quality, inclusive programs lead to positive outcomes not just for children with disabilities, but for all children (Camilli, Vargas, Ryan, & Barnett, 2010; Pianta, Barnett, Burchinal, & Thornburg, 2009; Strain & Bovey, 2011).

Research on the contributors to, and dimensions of, quality in early childhood programs are important both for research purposes and, more particularly, as a vehicle for informing professionals and policy-makers about the importance of structural features that contribute to quality (adult: child ratios, group size, teacher education); process quality (the nature of teacher–child interactions and learning activities); and contextual factors (policies, funding arrangements, and community resources) that support program quality (Goelman, Doherty, Lero, LaGrange, & Tougas, 2000). An effective, reliable and user-friendly tool to assess inclusion quality in early childhood programs is required for several purposes (Wertlieb, 2018). Such a tool could facilitate: (a) research on children’s experiences in inclusive programs to assess short and longer-term impacts of their participation and contribute to evidence-based policy and practice, (b) program evaluations of the impacts of alternative funding and support models and professional development activities, (c) self-assessment for programs seeking to improve their effectiveness, (d) the development of inclusion quality standards, and (e) public accountability and policy evaluation. Additionally, inclusion is recognized as a “critical component and indicator of high quality ECEC” (Halfon & Friendly, 2013, p. 12); therefore, an effective, reliable, and user-friendly tool to assess inclusion quality is necessary to advance research, policy, and practice by researchers (Buysse & Hollingsworth, 2009; Buysse et al., 2001), professionals (National Professional Development Center on Inclusion, 2009), and policy planners (Child Care Law Center, 2004).

There are several existing scales that could be used to assess inclusion quality in formal child care settings including: the Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford, & Cryer, 1998), the Early Childhood Special Education Program Design and Development Guide (EC-SPEED; Johnson, Johnson, MacMillan, & Rogers, 1993), and the Quality of Inclusive Experiences Measure-Revised (QuIEM-R; Dugan, Milbourne, & Schmidt, 2005). The ECERS, originally developed in 1980 by Harms and Clifford and later revised by Harms, Clifford, and Cryer (1998), has been particularly significant. The ECERS-R has played a unique role in serving as a research tool, as a means of articulating which practices are important to promote positive child outcomes, in accreditation initiatives, and as a means for promoting public accountability in state monitoring and quality improvement and rating systems (National Professional Development Centre on Inclusion, 2009). The ECERS-R is a widely used measure of global program quality with some indicators that pertain to inclusive practice; however, as inclusion is addressed through a limited number of items, it is not useful on its own for more in-depth investigations of inclusion quality. The EC-SPEED and the QuIEM-R were both designed as comprehensive measures to assess inclusion quality; however, the extended training and assessment period required for the EC-SPEED and the lack of further development on the QuIEM have limited their utility for research and assessment purposes.

A newer measure designed to assess inclusion quality that is both comprehensive and suitable for research purposes is the SpecialLink Early Childhood Inclusion Quality Scale (SECIQS; Irwin, 2009). This measure was originally developed¹ in Canada (a diverse country with 13 geopolitical jurisdictions and no federal control of education) from 1990–1992 as a screening tool to help SpecialLink identify exemplary centres through a process that involved nomination of programs by key provincial staff, child care professionals, and local disability

¹ Details on the development of the measure are available in Lero (2010).

advocacy organizations. The original two scales (Inclusion Principles and Inclusion Practices) underwent substantial revision in 2004–2005 and were reintroduced as two subscales of the SECIQS in 2009. The Inclusion Principles subscale assesses commitment to inclusion in policy and practice, while the Inclusion Practices subscale assesses the quality of practices and resources used to support inclusion in specific preschool and child care classrooms. Both scales are based on observation, document review, and interviews with program staff. The purpose of the current study was to examine the internal reliability and structural properties of the SECIQS. Analyses included assessments of inter-item consistency and reliability, exploratory and confirmatory factor analyses, and an examination of construct validity.

Methods

Following receipt of institutional ethics approval, data were collected from 588 classrooms in 457 ECEC programs at centres across Canada from 2005 through 2008, which formed a convenience sample. Many of the assessments were completed as part of initiatives developed to improve both overall program quality and the centres' effectiveness in including children with disabilities and extra support needs, in which case results of assessments were shared with centre directors and head teachers in collaborative action planning processes. Since the centres were voluntary participants in these initiatives and in this research project, one can assume that they were a motivated group and probably more likely to have higher scores on the SECIQS than a random sample of early childhood programs. Approximately half the classrooms were in centres located in Ontario; 38.5% were located in the Atlantic Provinces with greater representation from New Brunswick and Nova Scotia; and a smaller percentage (10.8%) were drawn from Manitoba, Alberta, and British Columbia. Less than 6% of the centres were half-day nursery or preschools; the rest offered full-day care, often along with a half-day program. Just over 41% were non-profit centres, 36% were private or commercial centres, and 23% were funded or operated by a municipal government. In most cases, only one room was observed in a given program; two or more rooms were observed in 46 centres. When more than one room in a centre was assessed, the same Inclusion Principles subscores were assigned, but Inclusion Practices items were scored separately for each room. Information about the number and nature of children in respective rooms was based on score sheet information when available; information about children with disabilities and extra support enrolled in the centre was based on supplemental questionnaires completed by directors. The 588 classrooms were categorized for the purposes of this study as follows in Table 1.

Table 1
***Presence of Children with Disabilities/Special Needs
in Classrooms and Child Care Centres***

Presence of children with disabilities/special needs	# of classrooms	% of classrooms
No such children in classroom, none enrolled in centre	79	13.4
No such children in classroom, at least one enrolled in centre	63	10.7
One or more such children in classroom	332	56.5
Unknown number of such children in classroom and centre	114	19.4
Total number of classrooms	588	100.0

To recap, the SECIQS (Irwin, 2009) consists of two subscales designed to assess inclusion quality.² The Inclusion Principles subscale (Table 2) assesses the extent to which a centre has adopted principles to guide decisions about enrolling children with disabilities and to ensure that their needs are met, as far as possible, within a typical setting. The scale consists of six items and 92 indicators. Scoring is based on observations and respectful questioning of the centre’s director and other centre stakeholders such as lead early childhood educators (ECEs), parents, and support staff, as well as on document review. A score of 5 or higher on Inclusion Principles subscale items requires that aspects of inclusion are covered appropriately and explicitly in a written policy. The Inclusion Practices subscale (Table 3) consists of 11 items and 158 indicators. The Inclusion Practices items reflect each centre’s and director’s approaches, but more specifically describe the practices and environment observed in a particular room. The number of indicators varies for each item, ranging from 8 to 20, with a mean of 14.7 indicators per item (see Figure 1 for example indicators).

Table 2

Description of Items Comprising the Specialink Early Childhood Inclusion Quality Scale —Principles Subscale

Item #	Name of item	Description of item
1	The principle of “zero reject”	No a priori limits are set that would exclude children with particular levels or types of disabilities.
2	The principle of natural proportions	The centre enrolls roughly 10–15% of children with special needs, in “natural proportion” to their occurrence within the community.
3	Same hours/days of attendance available to all children	Children with special needs are not limited in attendance options (e.g., part time or fewer days per week) compared to typically developing children.
4	Full participation	The centre is committed to enabling the full participation of children with special needs within regular group activities and routines through accommodations, modifications, and extra support where necessary. Pull-out time is limited or avoided when interventions can be done in the room and can involve other children.
5	Maximum feasible parent participation at the parent’s comfort level	The centre makes concrete efforts to encourage parents’ participation at Individual Program Planning meetings, committee meetings, training sessions and parent networking events. It also involves families to the maximum extent feasible, providing child care, transportation, flexible meeting hours, translation, etc., as necessary. “Maximum feasible participation” does not force family participation as a requirement of enrolment, but it demonstrates that every effort is made to make families feel welcomed and valued.
6	Leadership, proactive strategies, and advocacy for high quality, inclusive child care.	The director, staff, and board actively promote inclusion both in the centre and through public activities designed to effect policy change and ensure adequate support for high quality, inclusive programs.

² The SECIQS is available from www.specialinkcanada.org along with a video, training manual, and scoring sheets.

Table 3

Description of Items Comprising the SpecialLink Early Childhood Inclusion Quality Scale —Practices Subscale

Item #	Name of item	Description of item
1	The physical environment	The degree to which modifications have been made to support inclusion and enhance accessibility
2	Equipment and materials	The extent to which adaptations have been made and special equipment and materials are available and used in ways that allow children to participate comfortably in the group and that enhance their skills and capabilities
3	Director's role	The degree to which the director is actively involved in supporting inclusion and is knowledgeable and enthusiastic
4	Staff support	The degree of support provided to staff through consultative assistance and flexible/reduced ratios to support them in meeting individual children's needs
5	Staff training	The number of staff who have some training related to special needs and staff's access to continuing in-service training opportunities
6	Therapies	The degree of provision of therapeutic intervention provided to children in the centre — and the manner in which it is provided (in a pull-out space or separate clinic and/or within the program); the extent to which staff are involved in goal setting and work collaboratively with parents and therapists
7	Individual Program Plans (IPPs)	The extent to which IPPs are used to inform programming in the regular group setting, and are developed collaboratively by resource teachers or consultants, staff, and parents
8	Parents of children with special needs	The extent to which parents are involved, receive information and participate in decision making—both related to their own child, and as an advocate for other children at the centre and in the community
9	Involvement of typically developing children	The extent of interaction between children with special needs and their peers; the extent to which social interaction is facilitated and children are accepted by others
10	Board of directors or advisory committee	The extent to which the centre's board or parent advisory committee promotes and supports inclusion as policy in the centre and as desirable in the wider community
11	Transition to school	The degree to which the local school or school board, parents, and program staff work collaboratively in transition planning and are proactive to support the child's school placement

The layout of the items, indicators, and scoring method used in the SECIQS is based on the ECERS-R (Harms et al., 1998). Each item is rated in whole integers as 1 (*inadequate*), 3 (*minimal*), 5 (*good*), or 7 (*excellent*), based on the indicators, with descriptions listed below the 1, 3, 5, and 7 ratings. In Figure 1, Practice 5: Staff Training is provided as an example item with scoring indicators and instructions. Items are rated beginning with indicators in the *1-Inadequate* column, followed by those in the *3-Minimal* then *5-Good* columns, and finishing with those in the *7-Excellent* column. Items are equally weighted to produce an average score for each subscale. Item scores and average subscale scores were used for this analysis. In addition to the SECIQS, a three-page supplemental questionnaire was answered by 269 centre directors, which

provided additional information about their centre’s inclusion history, the number of children with disabilities and extra support needs enrolled in the centre at the time of the observation, and directors’ perceptions of the centre’s strengths and challenges in providing inclusive care and education.

Figure 1. Sample SECIQS Item

Practice 5: Staff Training

Inadequate 1	Minimal 3	Good 5	Excellent 7
<p>1.1 <input type="checkbox"/>Y <input type="checkbox"/>N No regular staff with special needs/inclusion training.</p> <p>1.2 <input type="checkbox"/>Y <input type="checkbox"/>N Staff not encouraged to attend workshops, conferences, in-services on special needs issues.</p> <p>1.3 <input type="checkbox"/>Y <input type="checkbox"/>N Director does not participate in inclusion training.</p>	<p>3.1 <input type="checkbox"/>Y <input type="checkbox"/>N One staff partially trained in special needs/inclusion¹.</p> <p>3.2 <input type="checkbox"/>Y <input type="checkbox"/>N Some² staff attend periodic³ workshops, conferences, in-services on special needs issues.</p> <p>3.3 <input type="checkbox"/>Y <input type="checkbox"/>N Director either participates in inclusion training OR encourages staff to do so.</p>	<p>5.1 <input type="checkbox"/>Y <input type="checkbox"/>N One staff has certificate in special needs/inclusion¹.</p> <p>5.2 <input type="checkbox"/>Y <input type="checkbox"/>N Many² staff attend periodic³ workshops, conferences, in-services on special needs issues.</p> <p>5.3 <input type="checkbox"/>Y <input type="checkbox"/>N Director participates in inclusion training AND encourages staff to do so.</p>	<p>7.1 <input type="checkbox"/>Y <input type="checkbox"/>N More than one staff has certificate in special needs/inclusion.</p> <p>7.2 <input type="checkbox"/>Y <input type="checkbox"/>N Most staff attend periodic workshops, conferences, in-services on special needs issues.</p> <p>7.3 <input type="checkbox"/>Y <input type="checkbox"/>N Director provides inclusion training at in-services, workshops, conferences or at community college.</p> <p>7.4 <input type="checkbox"/>Y <input type="checkbox"/>N Some inclusion training provided as in-services, with topics developed collaboratively.</p> <p>7.5 <input type="checkbox"/>Y <input type="checkbox"/>N Director/board promote inclusion training through funding of workshops, lieu days, career laddering, etc.</p>

¹ "Partial training" means the staff member has taken part of a certificate course (at least half) OR is currently doing so, OR has taken at least 25 hours of workshops on special needs/inclusion, approved by a certifying or approval body. "Full training" means a diploma or certificate in special needs/inclusion beyond basic ECE training.

² "Some" means at least 25% of staff; "many staff" means at least 50%; "most" staff means over 75%.

³ "Periodic" means at least once a year.

POINTS OF CLARIFICATION:

1.1 A regular staff would need to meet the definition of "partially trained" to achieve a "no" on this indicator.

1.2 , 3.3, 5.3, 7.5. "Encourage" means such supports as fees paid, travel paid, lieu time, career laddering. It can also apply to development of section of staff evaluation process that relates to inclusion.

7.3. "Director provides" means that director presents, leads, or facilitates workshops or in-services, or is part of a panel as a co-presenter.

7.4. "Topics developed collaboratively" means that members of staff, board, director, parent committee participate in identifying topics for PD. (Must include staff and director; must include participant from at least one other named group.)

Procedures

Initial training to establish reliability in scoring procedures was done in each major location by experienced SpecialLink trainers. In on-going intervention projects, inclusion facilitators (ECE professionals with training and experience in inclusive practice who worked with directors and staff to plan and implement changes in the centre) were trained to ensure that inter-rater reliability was established and maintained to be at least 85%. In other sites, experienced ECEs were recruited to serve as assessors through child care resource centres or inclusion consultants. All assessors participated in a full-day, classroom training with one of the SpecialLink trainers. This day-long session was followed by centre observations—two assessors went into the same classroom and independently observed that classroom for about three hours, using the SECIQS scale. They also interviewed the centre director and lead educator about indicators that were not observable. Upon completion of the observation and interviews,

the two assessors finished their scoring, and then filled out their column of the inter-rater reliability form. If their tabulated scores agreed 85% of the time, they were considered to be reliably trained. If their tabulated scores did not reach 85%, they repeated the observation process in another classroom. All assessors were cautioned to repeat the reliability trials after each five observations. In total, about 45 assessors (all experienced ECEs or inclusion facilitators) participated in the study, and the data collection process as described was carried out in all provinces. All data used in this project were collected by trained assessors.

Conceptual and Methodological Challenges

We encountered two challenges in conducting this research, which we feel are important to discuss. These were: (a) determining whether a child with disabilities or special needs was present; and (b) scoring items when there are no children with disabilities or special needs enrolled. To facilitate a common frame of reference, the SECIQS includes a definition of a child with disabilities or special needs. The definition refers mostly to children with an identified disability or condition. SpecialLink's definition of a child with disabilities or special needs is:

Children with Special Needs/Disabilities refers to children whose disabilities/disorders/health impairments meet your province's eligibility criteria for additional support or funding in child care settings. In areas with no additional support or funding, this term refers to children with an identified physical or intellectual disability that would be classified as moderate to severe. This definition does not include children usually described as being at high risk who have not actually been identified as having a significant disability or delay — even though such children may require curriculum modifications and/or additional attention. (Irwin, Lero, & Brophy, 2000, p. 11)

A challenge with counting the number of children with identified disabilities and extra support needs in a particular centre or classroom at any point in time is that children who have already started to attend an early childhood program are often in the process of being referred or on a waiting list for assessment. Consequently, a child might not meet the definitional criterion of having an identified need at the time when observations are conducted, but potentially could meet that criterion several weeks or months later. This affects not only who is counted (and potentially which classrooms or centres are considered to have a child with disabilities or special needs), but also whether funding is provided to hire a program assistant and whether or not there is ongoing access to specialists and professionals in the community. In order to be consistent across programs, we only considered a child to have disabilities and extra support needs if they had already been assessed.

A second issue was the assignment of scores in centres and classrooms that did not have any children with disabilities and extra support needs enrolled when the observations were conducted. The confusion was on how to score items: In some cases items were left blank that legitimately might have been scored *1-Inadequate* and, in others, assessors scored items based on what the director and teaching staff described as usual practice when children with disabilities or special needs have been present. We did not adjust scores to account for this issue, but we did undertake separate analyses on the

sample of classrooms in which one or more children with disabilities or special needs were enrolled and present in the classroom (referred to as inclusive classrooms) as a more rigorous assessment sample.

Finally, on the Practices profile, there were many missing scores (99, or about one sixth of the sample) for Practice 10: Board of Directors and Other Similar Units. In most cases, observers left this item blank or wrote in *N/A* because there was no board or parent advisory committee, as is commonly the case in privately owned centres. Irwin (2005) has directed that in such cases the item be scored as *1-Inadequate*, since best practice in early childhood programs includes having a board or parent advisory committee. Not having one deprives the director of the opportunity to obtain support for decisions and policies related to inclusion, and also deprives parents and community members of an opportunity to support their centre's commitment to inclusion.

Results

Results are presented in four parts: (a) descriptive statistics; (b) structural properties including exploratory factor analyses, subsequent scale modifications, and reliability estimates for the selected factor structure; (c) confirmatory factor analysis results; and, (d) preliminary data to support the construct validity of the SECIQS. All analyses were conducted using PASW Statistics for Windows, Version 18.0 (SPSS Inc., 2009). All descriptive statistics and analyses were based on the full classroom sample ($N = 588$) less those with missing data, resulting in 587 complete cases for the Inclusion Principles items (0.2% missing data) and 564 complete cases for the Inclusion Practices items (4.1% missing data).

Descriptive Statistics

Descriptive statistics were computed for each item and for the average subscale scores to assess distributions, normality, and missing data using the full sample of classrooms (Table 4). Scores on each item range from 1 to 7. Average scores on the Principles subscale items ranged from 3.48 to 4.51, with the lowest average score obtained for Principle 6: Leadership, Proactive Strategies and Advocacy for High Quality, Inclusive Child Care and the highest average score for Principle 3: Same Hours and Days of Attendance. Average scores on the Practices subscale items ranged from 2.39 to 4.80, with the lowest average scores obtained for Practice 10: Board of Directors, and Practice 2: Specialized Equipment and Materials. Both of these practice items had a median score of 2, which is considered inadequate. The highest average score was observed for Practice 9: Involvement of Typical Children, which assesses the extent to which staff promote social interactions and the full participation of children with disabilities and typically developing children together in a co-operative and collaborative manner.

Table 4

**Descriptive Statistics for the SpecialLink Early Childhood Inclusion Quality
Subscale Items and Average Scores for All Classrooms**

Principle/Practice	N ^a	Mean	Median	SD	Min.	Max.
Principle 1	587	4.51	4.00	1.48	1	7
Principle 2	587	3.93	4.00	1.31	1	7
Principle 3	587	4.48	4.00	1.53	1	7
Principle 4	587	4.20	4.00	1.48	1	7
Principle 5	587	4.19	4.00	1.48	1	7
Principle 6	587	3.48	4.00	1.70	1	7
Average Principles Score	587	4.13	4.00	1.24	1.00	6.83
Practice 1	564	3.07	4.00	1.88	1	7
Practice 2	564	2.64	2.00	1.57	1	7
Practice 3	564	3.39	4.00	1.61	1	7
Practice 4	564	3.29	4.00	1.74	1	7
Practice 5	564	3.53	4.00	1.73	1	7
Practice 6	564	4.13	4.00	2.06	1	7
Practice 7	564	3.45	4.00	2.08	1	7
Practice 8	564	4.15	5.00	2.03	1	7
Practice 9	564	4.80	5.00	1.72	1	7
Practice 10	564	2.39	2.00	1.56	1	7
Practice 11	564	4.05	4.00	2.09	1	7
Average Practices Score	564	3.54	3.55	1.17	1.00	6.55

^a Descriptive statistics based on sample of all classrooms ($N = 588$) minus missing; 587 complete cases for the Principles items and 564 complete cases for the Practices items.

Structural Properties

In order to provide details of the structural properties of the SECIQS, first the correlation of the two subscales was evaluated, followed by internal consistency estimates that were used to determine the extent to which each subscale could be substantiated as an internally reliable measure, with the expectation that the scores on the two subscales would be related to one another. Finally, exploratory factor analysis (EFA) techniques were used to determine the underlying structure of items when considering items from both subscales simultaneously.

A classroom in which many practices are observed that facilitate children's full participation and in which staff are well supported to work collaboratively as a team with parents and professionals is far more likely in a centre in which a commitment to inclusion quality is evident in verbal and written policies. For the full sample, average Principles subscale scores were highly correlated with average Practices subscale scores, $r = .73$, p (two-tailed) $< .001$. The Cronbach's alpha estimate for the

Principles subscale was .91 for the full sample of classrooms, indicative of high inter-item reliability. All items on this subscale were found to contribute significantly to the average scale score with a high level of internal reliability. This outcome was not surprising, as any centre that has carefully considered their commitment to inclusion would endorse more than one principle in their written policy statement, resulting in high inter-item correlations. In order to accurately assess the Practices subscale, analyses were limited to scores obtained from inclusive classrooms (with at least one child with an identified exceptionality in attendance; $n = 330$). The computed Cronbach's alpha was .83, indicating that the internal reliability of this subscale is good. The moderate inter-item correlations suggest that the items in this subscale make distinct contributions.

Exploratory factor analysis (EFA) permits an unconstrained exploration of how the 17 items cluster together to determine whether there is justification for two separate subscales and whether there are clusters of items that are more closely related to one another. The EFA was conducted using only inclusive centres (at least one child with an identified exceptionality enrolled in the classroom or centre; $n = 422$), as findings from an inclusion-based model would have greater utility. The EFA was conducted using maximum likelihood estimation with a Promax rotation, assuming correlations among factors (as per Field, 2013). Although Kolmogorov-Smirnov values indicated that the Practices and Principles item score distributions differed significantly from normal, skewness and kurtosis values were within a reasonable range (none were above 2.00 and most below 1.00); accordingly, the decision was made to proceed using maximum likelihood estimation. Three factors were extracted with Eigenvalues greater than 1 that accounted for 50.17% of the common variance (Table 5). The first factor, identified as Policies and Environment, accounted for 38.03% of the variance and included eight items: all six Principles items and two Practices items, Practice 1: Accessible Physical Environment and Practice 2: Specialized Equipment and Materials. The second factor, named Individualized Supports, included six Practices items: Practices 4, 6, 7, 8, 9, and 11, relating to individual program and educational plans, therapies, planning for the transition to school, parental involvement, involvement of typically developing children, and support for staff. The third and final factor, named Administrative Commitment to Inclusion, includes Practice 3: Director's Role and Practice 10: Board of Directors and accounted for 4.16% of the variance. (Table 5 details the factor Eigenvalues, variance, and individual item factor loadings.) This analysis confirms that all items comprising the SECIQS are justified in a composite measure of inclusion quality, with the exception of Practice 5: Staff Training.

Table 5
Factor Loadings of the 3-Factor Inclusion Model

Item	Factor Loadings		
	F ₁	F ₂	F ₃
Factor 1: Policies & Environment			
Principle 1	.98		
Principle 4	.84		
Principle 2	.80		
Principle 3	.76		
Principle 5	.70		
Practice 2	.54		
Principle 6	.52		
Practice 1	.30		
Factor 2: Individualized Supports			
Practice 7		.88	
Practice 6		.85	
Practice 11		.51	
Practice 8		.48	
Practice 9		.42	
Practice 4		.38	
Factor 3: Administrative Commitment to Inclusion			
Practice 10			.79
Practice 3			.76
Practice 5	–	–	–
Variance explained (%)	38.03	7.97	4.16
Eigenvalues	6.46	1.36	0.71

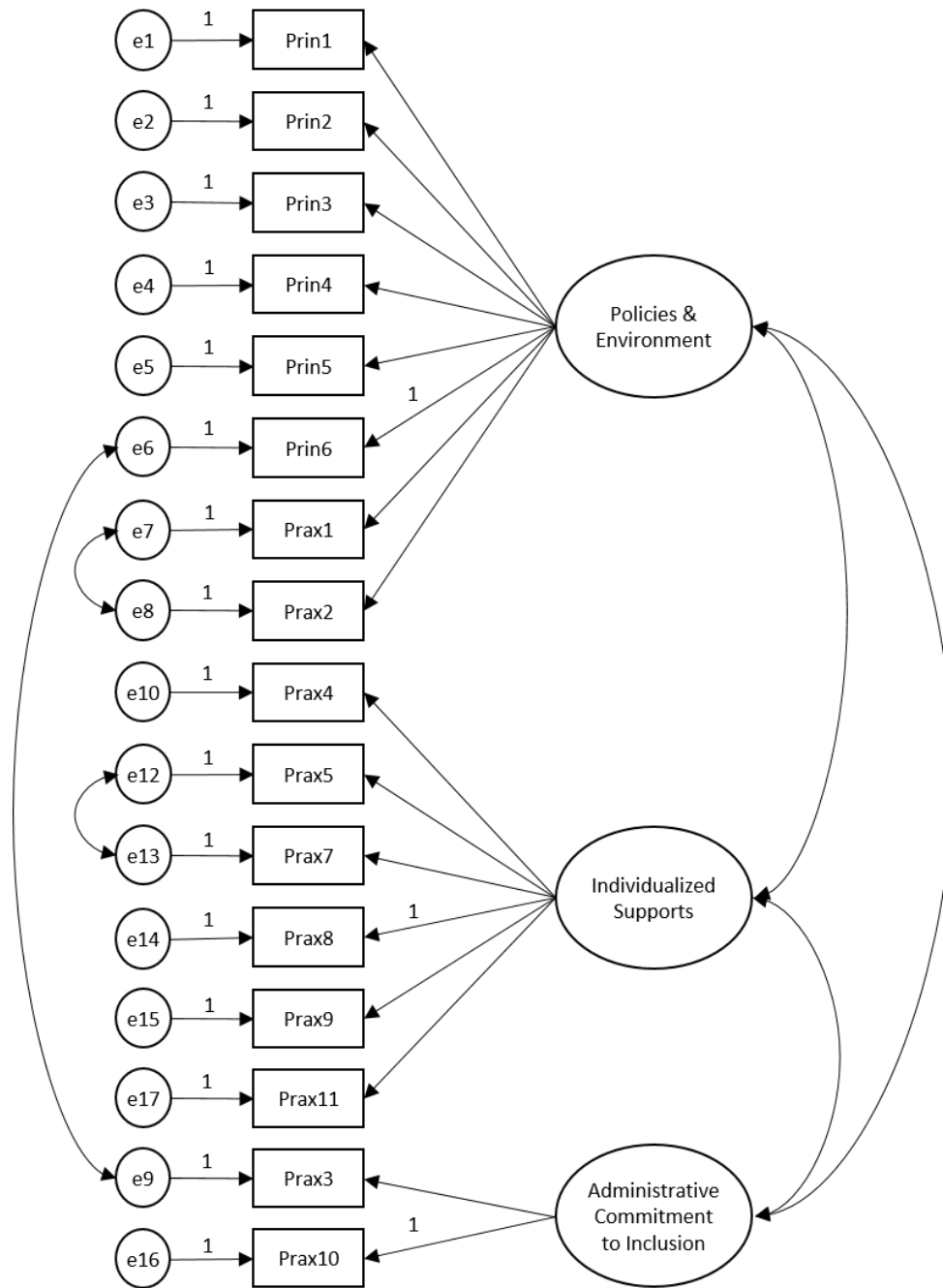
Note. Factor loadings < .30 have been removed.

Confirmatory Factor Analysis

As the final step in this analysis, the fit of the three-factor model derived from the EFA was evaluated using confirmatory factor analysis in the sample of inclusive centres. The following indicators of model fit were examined: The Tucker-Lewis index (TLI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and chi-square (χ^2). Values greater than .90 for each of the TLI and the CFI are considered to signify acceptable fit. Models with RMSEA values of .05 or less have good fit; however, RMSEA values of .08 or less are reasonable (Kline, 2011). Although good fitting models will have non-significant ($p < .05$) chi-square values, models with large sample sizes will almost always be statistically significant (Kline, 2011) and do not necessarily indicate a lack of fit. Three modifications were made to the initial model derived from the EFA, each conceptually meaningful and resulting in a significant improvement in model fit. The final model (Figure 2) demonstrated good fit when evaluated with the sample of inclusive centres ($n = 332$, $\chi^2 (98) = 301.6$, $p < .001$; TLI = .92; CFI = .93;

RMSEA = .07) and inclusive classrooms ($n = 332, \chi^2 (98) = 253.39, p < .001; TLI = .91; CFI = .94; RMSEA = .07$). Factor loadings ranged from .41 to .83 for inclusive centres and from .44 to .82 for inclusive classrooms.

Figure 2. Final Three-Factor Model for the SpeciaLink Early Childhood Inclusion Quality Scale



Note: Prin = Inclusion Principle; Prax = Inclusion Practice

Construct Validity

As an initial step toward establishing the validity of the SECIQS, descriptive statistics and item distributions for each subscale were compared for classrooms in centres that did and did not include any children with disabilities or special needs. Calculations for these analyses utilized list-wise deletion resulting in the following samples: (a) for the Principles subscale, 421 centres that did and 79 centres that did not include any children with disabilities or special needs; (b) for the Practices subscale, 330 centres that did and 182 centres that did not include any children with disabilities or special needs. The assumption was that centres that did not enrol any children with disabilities or special needs would be less likely to demonstrate a strong commitment to full inclusion or have written policies to that effect than inclusive centres and would therefore have lower scores on the scale. Analysis supported this hypothesis. Item scores on the Inclusion Principles subscale obtained from classrooms in centres that were known not to have any children with disabilities or special needs enrolled ($n = 79$) had significantly lower scores on each item and on the average Principles subscale score than classrooms in inclusive centres. The average Principles subscale scores were 3.02 ($SD = 0.80$) for classrooms located in centres that did not enrol any children with disabilities or special needs and 4.36 ($SD = 1.19$) for classrooms in inclusive centres. The largest difference between groups was observed for Principle 6: Leadership and Proactive Strategies where the mean item score was 1.71 in cases when no children were enrolled in the centre, compared to 3.78 in classrooms in inclusive centres. Comparisons using Welch F ratios on One-Way Analysis of Variance tests (correcting for unequal sample sizes and unequal variances) demonstrated significant differences ($p < .001$) between the groups for all items and average subscale scores (Table 6). Calculated effect sizes (partial eta squared, η_p^2) indicate that the group differences (with the exception of Principle 3: Same Hours and Days) were in the medium-to-large range.

All item scores on the Inclusion Practices subscale obtained from inclusive classrooms were significantly higher than scores obtained in classrooms that do not include children with disabilities or special needs (Table 6). The average Practices subscale score was also significantly different between the two groups, with inclusive classrooms having an average score of 3.88 ($SD = 1.01$), compared to 2.76 ($SD = 1.04$) for rooms without any children with disabilities or special needs enrolled at the time of assessment. Calculated effect sizes (η_p^2) were primarily in the medium-to-large range with the exception of Practices 1, 5, 9, and 11.

The analyses presented thus far demonstrate major differences in scores obtained on the scale items and average subscale scores when classrooms in inclusive centres are compared to classrooms in centres that do not have any children with disabilities or special needs enrolled. This constitutes *prima facie* evidence of the validity of this measure. There was no other external measure of inclusion quality obtained that could serve as a validity check; however, data were available from the supplemental questionnaires completed by centre directors. From that questionnaire, the director's own rating of how well the centre was doing in providing inclusive care in the community (on a scale of 1–10) was used as an imperfect, but relevant, external criterion for further investigation. Directors' ratings of their centre's effectiveness ranged from 2 to 10.

Table 6

Analysis of Variance Tests for Differences in SpecialLink Early Childhood Inclusion Quality Subscale Items and Average Scores Between Classrooms in Centres with No Children with Disabilities/Special Needs and Classrooms in Inclusive Centres

Principle or Practice	Statistic ^a	df1	df2	Effect size ^b (η_p^2)
Principle 1	85.33*	1	130.64	.1097
Principle 2	174.48*	1	150.65	.1719
Principle 3	20.85*	1	112.45	.0379
Principle 4	89.07*	1	135.20	.1089
Principle 5	58.51*	1	137.05	.0730
Principle 6	214.14*	1	154.02	.1989
Average Principles Score	155.47*	1	151.43	.1553
Practice 1	30.97*	1	358.85	.0587
Practice 2	115.15*	1	437.22	.1679
Practice 3	45.86*	1	342.87	.0870
Practice 4	138.65*	1	386.02	.2099
Practice 5	20.13*	1	353.86	.0393
Practice 6	58.75*	1	318.44	.1138
Practice 7	101.91*	1	397.37	.1606
Practice 8	33.46*	1	302.31	.0705
Practice 9	23.66*	1	299.63	.0512
Practice 10	46.54*	1	442.35	.0747
Practice 11	15.83*	1	309.84	.0341
Average Practices Score	137.81*	1	364.13	.2156

^a Asymptotically *F* distributed, *df1* for between groups, *df2* for within groups

^b Partial eta squared calculated using ANOVA *F*-statistics; interpretation as small, medium, and large effects reflected in values of .0099, .0588, and .1379, respectively (Richardson, 2011)

* $p < .001$

Analyses indicated little difference in the ratings obtained for inclusive classrooms and classrooms that did not enrol any children with disabilities or special needs, but were located in inclusive centres. This was not unexpected, since directors were referring to their centre as a whole when providing a rating. The mean rating for classrooms in centres with no children with disabilities or special needs enrolled at the time of assessment was 7.9 ($SD = 1.7$); the average rating for classrooms in inclusive centres was 8.1 ($SD = 1.7$). An independent samples *t*-test showed no significant difference between the ratings for the two types of classrooms ($t = -0.8, p = .4$).

In an effort to further assess the construct validity of the scale, the directors' ratings were used as an assessment of convergent validity. The approach taken was to determine the extent to which scores on the Inclusion Principles and Practices items were related to the directors' ratings using Pearson correlations. There was a significant and positive

relationship between Inclusion Principles subscale scores and the directors' ratings of their centre's effectiveness, $r = .54$, p (two-tailed) $< .001$. There was also a significant, positive relationship between Inclusion Practices subscale scores and the directors' ratings, $r = .53$, p (two-tailed) $< .001$.

Discussion

The main purpose of this study was to examine the internal reliability and structural properties of the SpecialLink Early Childhood Inclusion Quality Scale, a measure designed to assess inclusion quality in early childhood programs. The data for this study were obtained primarily as part of ongoing initiatives to improve program quality and enhance inclusion effectiveness, with observations scored by assessors who were trained for this purpose.

Factor analyses supported the use of the SECIQS for assessing inclusion quality. Exploratory factor analysis identified a three-factor model, indicating that the two subscales encompassed three clusters of items. The first factor, Policies and Environment, reflects the extent to which classrooms are located in centres that have explicitly considered principles for inclusion and are capable of welcoming children with diverse abilities in an accessible environment with a range of materials and equipment. The second factor, Individualized Supports, reflects specific practices that ensure the successful inclusion of individual children through therapies and individual program plans, collaboration with professionals, and parent support in an environment that supports the social inclusion and interaction among children with disabilities or special needs and their typically developing peers. The provision of additional staff resources to support inclusion also loads on this factor. The third factor, Administrative Commitment to Inclusion, reflects the extent to which directors take an active role in supporting inclusion, supported by a board of directors or parent advisory committee.

Of the 17 items, one item did not cluster with these three factors—Practice 5: Staff Training. This finding was somewhat puzzling. It may be that the effects of staff training specific to inclusion are better represented by such visible practice items as involvement in developing and implementing Individual Program Plans and facilitating social interactions with typically developing children, and/or that in this sample of classrooms there was limited variability in the extent to which ECEs had training or educational qualifications specific to inclusion. Finally, confirmatory factor analysis of the three-factor model demonstrated acceptable fit with the data for both inclusive classrooms and the full sample of inclusive centres. A few modifications were made to the model resulting in significant improvements in model fit. These results provide initial support for the utility and appropriateness of the SECIQS for assessing inclusion quality in early learning and child care environments.

Evidence for the scale's construct validity is manifest in the pattern of significant and meaningful differences in item and average subscale scores observed in comparisons between classrooms from inclusive centres and classrooms from centres that did not enrol any children with disabilities or special needs. It was of particular interest that the largest difference was observed between groups for scores on Principle 6: Leadership and Proactive Strategies. Odom (2002) and Irwin, Lero, and Brophy (2004), among others,

have identified the director's leadership as a crucial feature for inclusion quality. Indeed, in some cases, it may account for the centre not enrolling children with disabilities or special needs at all. Finally, average subscale scores correlated significantly with directors' own ratings of how well they feel their centre is doing in providing inclusive care in the community, demonstrating further evidence of construct validity of the scale.

Limitations

Since, as noted above, many of the assessments used for this study were completed as part of voluntary, ongoing program quality improvement initiatives, this dataset most likely represents centres that were interested in quality improvements and in enhancing their effectiveness in including children with disabilities or special needs (a limitation). A further limitation was the lack of external measures available to assess inclusion quality, such as ratings by parents or other professionals, as well as any measures of children's progress in classrooms that had higher or lower scores. Such additional research would be useful in order to further establish the validity of this measure.

Implications for Policy and Practice

Previous research on early childhood education and care programs in Canada and the United States have identified the importance of a variety of factors that are important for effective inclusion (e.g., positive attitudes, enhanced understanding, evidence-based instruction, professional development, effective leadership, environmental factors, additional funding, and collaborative relationships; Cummings, Sills-Busio, Barker, & Dobbins, 2015; Marks, 2007; Mulvihill, Cotton, & Gyaben, 2004; Rosenberg, Ratzon, Jarus, & Bart, 2012; Wood, 2015). As well, Irwin, Lero, and Brophy (2000) have affirmed the importance of using a dynamic perspective to assess factors associated with positive and regressive changes in centre directors' and early childhood educators' commitment to inclusion and effectiveness in meeting the needs of children with a range of special needs. The use of reliable and valid inclusion quality scales could help clarify how factors operate individually and in combination in centres and classrooms that differ in inclusion quality. Reliable and valid measures of inclusion quality can also be used to assess the effectiveness of interventions aimed at improving inclusion quality in early childhood programs and as useful tools to develop program standards for the profession. Knowledge about inclusion quality and its components should be included in both pre-service professional education and in specialized programs for centre directors and for ECEs employed in community-based resource programs. Research on dimensions of inclusion quality can contribute to an understanding of this phenomenon and ultimately to the development of professional standards (Buysse et al., 2001). Given the findings reported in this research, we recommend using all items in the SECIQS and scoring for all three factors in research studies. Separate subscale scores for the Inclusion Principles and Inclusion Practices subscales are useful for centre assessments and quality improvement initiatives and for educating the field about the contributors to inclusion effectiveness. Further research should be done to confirm external validity and to establish the effectiveness of the SECIQS in intervention studies.

Finally, because policy-makers have a duty to use public funds wisely, they require tools to determine whether early learning programs are providing the quality of programs young children need and deserve. Reliable and valid measures can contribute to public accountability for investments in programs and indicate where improvements are needed. Data can also be used to determine whether current methods of supporting inclusion in child care programs require improvement and to suggest what kinds of additional supports are needed. High quality, inclusive programs should be used as exemplars for others, providing opportunities for mentoring and further model development, as well as a focus for continued advocacy work (Bancroft & Underwood, 2015).

Conclusion

In summary, this study provides evidence for the utility and reliability of the Special Link Early Childhood Inclusion Quality Scale, in assessing inclusion quality within early childhood programs. In addition, the validity of using both the Inclusion Principles and Inclusion Practices subscales is supported. Scores on the Principles subscale discriminate effectively between classrooms in inclusive centres and classrooms in centres that do not include any children with disabilities or special needs. Scores on the Practices subscale discriminate between inclusive classrooms and classrooms that do not have any children with identified disabilities or special needs. Both subscales relate strongly to directors' global ratings of their centre's effectiveness in including children with disabilities or special needs. Others are encouraged to employ the SECIQS and extend its utility for research, policy, and practice advances in ensuring that children with exceptionalities—and all children in child care—reap the benefits of high quality early childhood programs.

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