Title: Competency drivers to support implementation of early intensive behavioral intervention in large-scale community-based services: Perspectives of caseworkers and organization representatives

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Abstract: Implementing evidence-based practices in “real-world” settings poses significant challenges. Organizations involved must address this issue by providing supportive infrastructures. Among the elements to consider are competency drivers, which refer to the selection, training, and supervision of caseworkers. The purpose of this study was to describe the perspectives of caseworkers and representatives on competency drivers that organizations put in place to support the implementation of early intensive behavioral intervention (EIBI) in large-scale community-based services. The sample consisted of 109 caseworkers and 23 organization representatives who completed questionnaires. Results demonstrated that respondents consider clinical support and training as key elements in EIBI implementation. However, despite recognizing these factors, respondents reported considerable variability in practices. It appears necessary to better define and plan the implementation of these competency drivers with a view to improving EIBI implementation.

Keywords: early intensive behavioral intervention, implementation, training, supervision

Highlights

- Concerns persist about large-scale implementation of EIBI services.
- The research-to-practice gap is a critical issue for EIBI services.
- Competency drivers aim to improve the implementation of an intervention as intended.
- Competency drivers include staff selection, training and supervision.
- Results show variability concerning competency-drivers within public EIBI services.

Introduction

Early intensive behavioral intervention (EIBI) is one of the most documented interventions for young children with autism spectrum disorder (ASD). To date, EIBI has been the subject of numerous systematic reviews (e.g., Odom, Collet-Klingenberg, Rogers, & Hatton, 2010; Prior, Roberts, Rodger, Williams, & Sutherland, 2011; Reichow et al., 2018; Warren, McPheeters, Sathe, Foss-Feig, Glasser, & Veenstra-VanderWeele, 2011; Weitlauf, McPheeters, Peters, Sathe, Travis et al., 2014) and meta-analyses (e.g., Kuppens & Onghena, 2012; Makrygianni & Reed, 2010; Makrygianni, Gena, Katoudi, & Galanis, 2018; Reichow & Wolery, 2009; Virués-Ortega, 2010). Various EIBI models have been documented and evaluated.

EIBI within large-scale community services

EIBI has been implemented progressively in the community. Increasing numbers of studies involve the evaluation of EIBI in contexts of large-scale community-based services. Results of these studies are encouraging. Eikeseth and colleagues documented gains among children receiving an early behavioral intervention offered in inclusive preschool settings in Sweden (Eikeseth, 2009; Eikeseth, Klintwall, Jahr, & Karlsson, 2012). Some components of these community services models differ, notably in terms of intervention strategies selected (Tsiplova et al., 2019) or emphasis on inclusion of children in regular settings, as in the case of the Developmentally Appropriate Treatment for Autism (DATA) Model (Schwartz, Ashmun, McBride, Scott, & Sandall, 2017). In Canada, Perry, Cummings, Geier, Freeman, Hughes et al. (2008) focused on the effects of EIBI in a sample of 332 children with ASD receiving large-scale services in Ontario. Results showed gains (e.g. rate of development, gains in cognitive and adaptive levels) for the majority of the children. In Quebec (Canada), Rivard, Terroux & Mercier

(2014) described the effects of an early behavioral intervention offered by a public health and social services organization on 93 children with ASD. Results showed gains in terms of IQ, adaptive behaviors, and socio-affective skills after one year of intervention. Moreover, these results are consistent with those of Dionne, Paquet, Joly, Rousseau & Rivard (2016b) who also observed developmental gains in children from 14 Quebec institutions. More recently, Smith, Flanagan, Ungar, D'Entremont & Garon (2019), in Nova Scotia (Canada) published an article reporting gains related to adaptive behaviors and a reduction in challenging behaviors among young children with ASD who had participated in public EIBI programs funded by the health system. However, concerns persist regarding the establishment of EIBI within large-scale community-based services, notably regarding implementation fidelity. Furthermore, some authors have documented variability in the quality of EIBI implementation (Dionne, Joly, Paquet, Rousseau, & Rivard, 2016a; Gamache, Joly, & Dionne, 2011; Love, Carr, Almason, & Petursdottir, 2009); others have highlighted challenges related to implementation, mentioning limited resources in particular (Blocher-Rubin & Krabill, 2017).

Intervention and Context

In Canada, provinces are responsible for providing health and social services, including support for developmental difficulties such as ASD. Service models vary from province to province (Shepherd & Waddell, 2015; Smith et al., 2010; Volden et al., 2015). For example, British Columbia and Alberta provide funding for private services directly to families. In New Brunswick, financial assistance is offered to enable families to access EIBI services through recognized private agencies (Department of Education and Early Childhood Development, 2017). Nova Scotia (Nova Scotia Hearing and Speech Centres, 2018), Ontario (Ministry of Children, Community and Social Services, 2018), and Quebec (Ministère de la Santé et des

Services sociaux, 2003) offer early intervention programs through large-scale public services. In addition to funding-related differences, the models differ in various aspects, notably the number of intervention hours provided to each child, eligibility criteria, approach used, and locations where the EIBI takes place. For instance, Nova Scotia proposes a program (maximum of fifteen hours of direct intervention) that targets development of functional communication and play skills for preschool-age children, which is offered by a team of caseworkers, clinical experts, and speech therapists (Smith et al., 2010). For approximately fifteen years, Quebec's health and social services organizations have been offering specialized EIBI services to children with ASD between the ages of two and five years old, or in some cases, a suspected diagnosis of ASD (Dionne et al., 2016a). The interventions are offered by teams consisting of caseworkers who apply the intervention (most of whom have three years of post-secondary education) and supervisors (most of whom have master's degrees). However, several implementation challenges are observed within EIBI services in Quebec (Dionne et al., 2016a), as in other contexts (Studer, Gundelfinger, Schenker et Steinhausen, 2017).

Support for implementation

It is now recognized that the process used to implement a program should receive as much attention as the quality of the program itself. In fact, it is not sufficient to choose evidence-based intervention or program practices; strategies must also be adopted to implement them correctly (Fixsen, Blase, Metz, & Van Dyke, 2015; Sam, Cox, Savage, Waters, & Odom, 2019). Because they can limit the impacts of programs, an increasing numbers of researchers in the field of intervention for children with ASD are looking at the challenges involved in implementing evidence-based practices in community-based services (Guldberg, 2016; Johnson, Fleury, Ford, Rudolph, & Young, 2018; Kucharczyk, Odom, Cox, Shaw, & Sam, 2018; Locke et al., 2016;

Odom, Cox, & Brock, 2013; Parsons et al., 2013; Paynter & Keen, 2015; Roll-Pettersson, Olsson, & Ala'i-Gonsales, 2016; Wood, McLeod, Klebanoff, & Brookman-Frazee, 2015).

Implementation science is useful for overcoming difficulties in applying evidence-based interventions in practice (Franks & Schroeder, 2013). In fact, active implementation methods incorporate the best practices at every stage of implementation of an evidence-based practice (Fixsen et al., 2013). Applying practices based on scientific evidence is effective only if it meets the target population's needs, considers the research data, and can be feasibly implemented in the given context (Easterling & Metz, 2016). For Easterling and Metz (2016), this entails, among other things, that individuals need to have the necessary skills to carry out the implementation and that the environment provides the necessary structure and support. Furthermore, studies have shown that, compared with those in control groups, implementers who have received personalized follow-up, coaching, or feedback on their performance are better able to apply the recommended interventions and to define quality learning objectives with children (Hemmeter, Snyder, Fox, & Algina, 2015b; Snyder et al., 2018; Hemmeter, Hardy, Schnitz, Adams, & Kinder, 2015). Positive gains in terms of development and learning have been noted in children whose teachers have participated in professional development programs (Snyder et al., 2018).

Frameworks for implementation support

For several years, conceptual frameworks have been proposed for analyzing and planning a quality implementation. The Active Implementation Frameworks (AIFs) was developed upon a synthesis of relevant literature (Metz & Bartley, 2012) and suggest considering three broad categories of factors at every step of intervention implementation (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). These are called implementation drivers: 1) organization drivers, which is the support that the organization provides to favor implementation, notably by setting

up a data system to support decisions; 2) leadership drivers, which is leadership aiming to support changes in practice; and 3) competency drivers, which is staff selection, training, supervision, and fidelity evaluation (Fixsen et al., 2005; Metz et al. 2015; Metz & Bartley, 2012) (Fig. 1). Although all implementation drivers are equally important and support greater gains for children, the current study focuses on competency drivers.

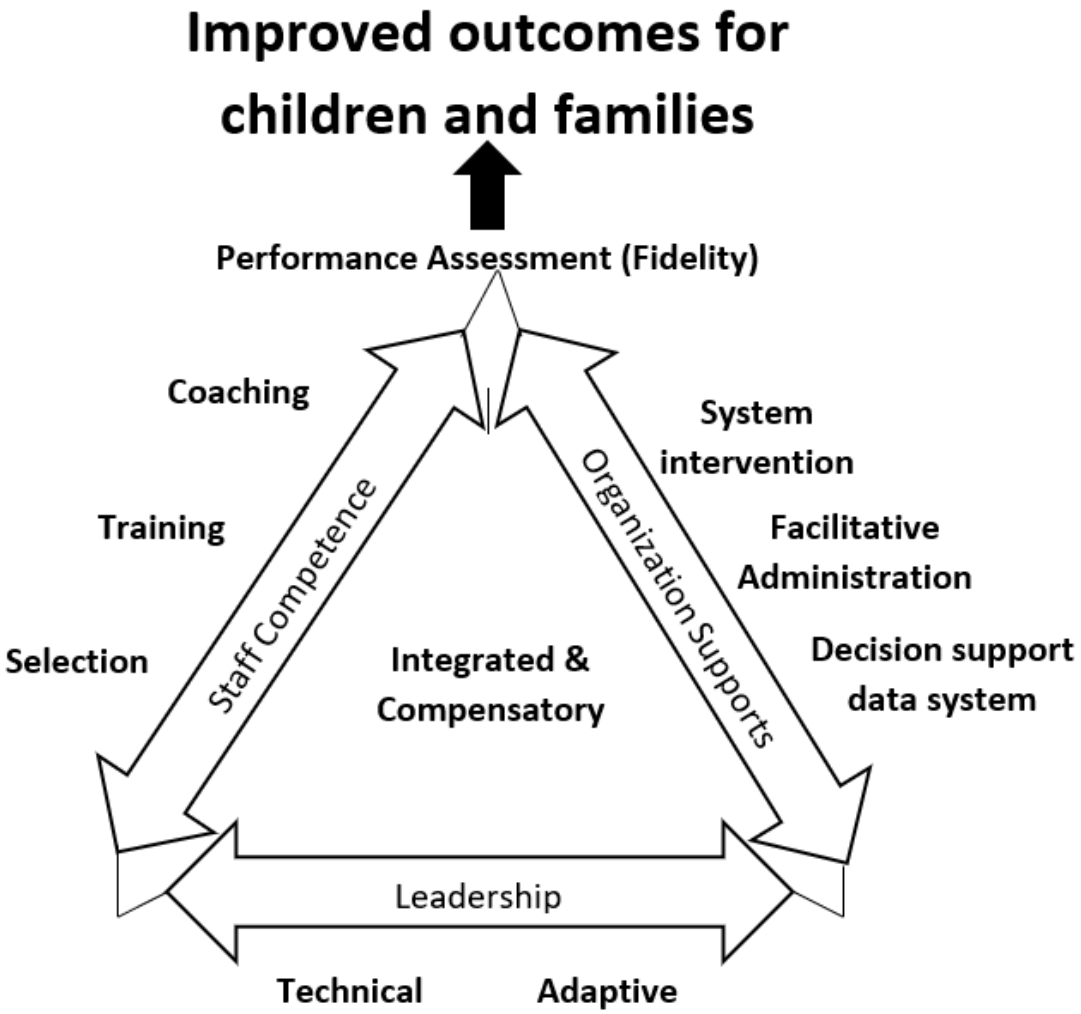

Figure 1. Implementation drivers (Metz et al., 2015).

Competency drivers

Competency drivers are described as "mechanisms to develop, improve and sustain one's ability to implement an intervention as intended in order to benefit children, families and communities" (Metz et al., 2015, p. 416). Implementers may be offered various types of support, including materials such as documents regarding the program and an implementation guide, or external assistance, such as mentoring, coaching, training, and supervision (Bishop, Snyder, & Crow, 2015; Hemmeter, Snyder, Fox, & Algina, 2015b). Offered to people who implement a program, supervision is likely to reinforce implementers' competence and confidence, and thus enable good implementation of evidence-based practices (Shannon et al., 2015).

In the context of EIBI, some authors express concerns regarding staff knowledge and skills (Leaf et al., 2017) and their perceptions about the intervention (Klintwall et al., 2012; Langh et al., 2017). This could influence the quality of the intervention (Långh, Perry, Eikeseth, & Bölte, 2021). Since quality and fidelity are linked to children's outcomes, more attention should be given to these factors (Långh et al., 2021). In fact, the importance of training and supervision for ensuring implementation fidelity has been brought forth by several authors in the field of EIBI (Klintwall & Eikeseth, 2014; Kucharczyk et al., 2012; Långh et al., 2017; Leaf et al., 2017). Långh et al. (2017) noted that supervision helps improve the knowledge of caseworkers who apply EIBI in contexts of community-based services. Some results suggest that supervision is associated with EIBI quality (Eikeseth et al., 2009; Reichow & Wolery, 2009). However, further research on the subject is needed, notably in contexts of services offered by public organizations, where resources to do so are often limited. Some authors also suggest that caseworkers' levels of motivation to use a procedure and their perceptions regarding its usefulness will influence its effects (Klintwall et al., 2012; Långh et al., 2017). Therefore, it is

critical to document the actual practices in public agencies related to the support provided to implementers, in terms of both training and coaching or supervision. As mentioned, this support has an impact on the quality of EIBI, as well as on families outcomes. In Quebec, little information is available on characteristics of the support offered to people who implement EIBI. In a previous study, Paquet, Dionne, Joly, Rousseau et Rivard (2017) reported some heterogeneity in supervision practices in contexts of EIBI as reported by organization representatives. Yet, there is a lack of information from the implementers' viewpoints.

Objectives

Despite the importance of supporting implementation to reach optimal outcomes for children and their family during EIBI services, few studies have paid attention to the selection, training and supervision of caseworkers in real life setting and large-scale public community services. However, according to the conceptual model presented above, these factors are of primary importance to achieve the intervention outcomes targeted for children with ASD and their families. This article aims to document *competency drivers* from the perspectives of 1) caseworkers who apply EIBI, and 2) representatives of the organizations that offer EIBI, as well as their respective perceptions of factors that most favor or hinder EIBI implementation within community-based services.

Method

This study was conducted as part of the second phase of a larger project that aimed to document implementation and outcomes of EIBI, including a survey concerning the EIBI implementation within large-scale public services in Quebec, as perceived by caseworkers and organizations' representatives. It uses a mixed-method design to document the three concepts

associated to competencies drivers (selection, training, coaching/supervision) related to EIBI implementation in public health and social services.

Participants

Participants were recruited in two stages. First, all health and social services organizations in Québec (N = 22) were invited to participate in the project. Fourteen of the 22 (63.6%) organizationsaccepted the invitation. Each organization was in charge of recruiting participants, caseworkers, and organization representatives in EIBI services. To do so, the organizations used recruitment kits (explanatory video, information and consent forms, researchers' contact information) provided by the research team.

Caseworkers

In total, 109 caseworkers accepted to participate and returned their completed questionnaire. Inclusion criteria for caseworkers were 1) being the main caseworker of the child with ASD who was participating in the larger study and 2) consenting to participate in the study. A large majority of respondents are women, with an average age of 34.8 years (range = 21-63). The mean number of years' experience in an EIBI program was 4.95 (SD = 3.87, MIN = 0.17, MAX = 24.00).

Organization representatives

Each organization was asked to designate representatives, that is, individuals considered to have the best knowledge of the program that was established. Representatives of the organizations whose caseworkers were participating in the project filled out a questionnaire on the implementation of their program. It should be noted that one organization filled out more than one questionnaire. The purpose was to present as faithfully as possible both of their EIBI models, which differed according to the point of service on their territory. The data from the 15

questionnaires received are therefore taken into consideration in the analysis. Each of the questionnaires was thought to present the reality of a service within an organization. A total of 23 representatives (19 women) filled out the questionnaires (between 1 and 3 per questionnaire); 16 were in clinical management positions (e.g., supervisor; professional; counselor; clinical activity expert; planning, programming, and research agents; educators), and 7 in administrative positions (e.g., leader, coordinator). Respondents' number of years of experience varied from 3 (n = 3) to more than 10 (n = 1). The age of the representatives is unknown.

Instruments

Data were collected using two versions (one for caseworkers and another for organization representatives) of a questionnaire on implementation fidelity inspired by Gamache et al. (2011) as well as Love et al. (2009). It is a self-report questionnaire used within the main study, with some questions designed to describe the program and others to obtain respondents' perceptions of the quality of the program implementation fidelity.

The following questionnaire sections were used to meet the objectives of this article: 1) respondents' characteristics; 2) individuals implementing the program, their training, and their degree of enthusiasm regarding EIBI); 3) support offered by the organization; 4) partners involved in the program; and 5) factors that most favor or hinder implementation. The questionnaires for caseworkers and those for representatives comprised the same sections; only the number of questions and wording of some differed so as to be better suited to the respondents. The questionnaires encompassed three types of questions: closed, multiple-choice (*Likert* with comments), and open.

Analyses

For the closed and multiple-choice questions, descriptive analyses (frequencies and percentages) were conducted. Using a strategy similar to Sutherland et al. (2017), a simple inductive analysis was conducted for the responses to open questions. Those questions were: "Why a supervision system?"; "What contents are addressed during the supervision meetings?"; "In your opinion and in order of importance, what three factors foster EIBI implementation the most in your organization?" As described by Brown and Clark (2006), different steps were followed throughout the process. First, all responses to open questions were transcribed using MSWord and then read closely several times by the first author in order to familiarize herself with the content of transcriptions, and to identify codes and themes. The grid was refined during the process and data—text excerpts—were classified under codes and grouped according to broad themes. Counting excerpts that touched a same theme were grouped under categories. Lastly, another researcher used the grid to verify the procedure. In the case of disagreements, discussions were carried out to reach consensus. The proportions of participants who provided responses within each (sub)theme were computed as percentages of the total sample size.

Results

Results are presented in two stages. The first pertains more specifically to elements corresponding to the notion of *competency drivers*. The second concerns the perception of factors that favor EIBI implementation and of resources made available to the teams to enable implementation. The information collected from participants in each category, that is, caseworkers and representatives, are presented and compared.

Competency drivers

Competency drivers translate mainly as 1) staff selection, 2) training offered to them, and 3) coaching and supervision, including fidelity evaluation.

Staff selection. Factors considered when selecting staff include initial training and personal characteristics, such as enthusiasm for the program. The majority of caseworkers reported having college-level diplomas[1] (*n* = 68, 62.4%), although some mentioned having bachelor's (*n* = 31, 28.4%) or master's (*n* = 5, 4.6%) degrees. Furthermore, 32 caseworkers (29.4%) reported having certificates in ASD or diplomas in advanced studies in ASD (*n* = 6, 5.5%), in addition to college-level or university degrees. Eleven (10.1%) caseworkers had certificates in fields other than ASD. It should be noted that the caseworkers may have given more than one response and that eight caseworkers (7.3%) said they had received other training. The representatives drew a similar portrait of their caseworkers' training. In fact, they reported that the education levels of most caseworkers who apply the program daily had the equivalent of college-level diplomas (*n* = 13, 86.7%). Representatives of two organizations indicated that caseworkers generally had bachelor's degrees (*n* = 2, 13.3%).

Respondents were asked about caseworkers' enthusiasm. The majority of caseworkers said they were "very enthusiastic" (*n* = 86, 78.9%) or "moderately enthusiastic," 19 (17.4%), and only 2 (1.8%) said they were "slightly enthusiastic." One caseworker (0.9%) reported being "not at all enthusiastic," and the data were missing for another caseworker. When asked about the level of enthusiasm of program implementers, the majority of representatives qualified their caseworkers as "very enthusiastic" (*n* = 12, 80.0%) or "moderately enthusiastic" (n = 3, 20.0%). None reported their EIBI program caseworkers to be "not very" or "not at all" enthusiastic. Respondents in both categories had very similar perspectives.

[1] A public school that provides the first level of post-secondary education, pre-university and technical programs.

Representatives were asked the following question: “Do you feel that the people implementing the program have the necessary characteristics to do so?” Most replied positively, although the scores for some were rather low. In fact, respondents gave one organization a score of 5 and another one, 3. The mean score on a scale of 0 (not at all) to 10 (absolutely) was 7.53 (*SD* = 1.77, MIN: 3, MAX: 10).

Training provided during employment. Various EIBI training modalities were made available to Quebec caseworkers. Among them were in-house training programs and a specialized university training program.

To the question, “Have you received any EIBI training as part of your duties related to the EIBI program?”, 95 caseworkers (87.2%) replied “yes,” whereas the other 14 (12.8%) responded “no.” Almost all representatives reported the number of hours of training caseworkers received when hired for the program (Table 1), which was consistent with the caseworkers’ statements. Data were missing for two organizations.

Table 1

Number of Hours of Training Upon Hiring

	No training	Number of hours			
		1 to 15	16 to 30	31 to 45	Over 45
Number of organizations	2	3	3	4	1
Details by organization		- 2 days - 7–14 h	- 21 h - 30 h - 24 h[a]	- 35 h - 35 h - 42 h	- 74 h

-	45 h

[a]In addition to practice workshops and coaching

Most representatives mentioned that the training comprised pedagogical modalities that included written instructions (*n* = 13, 86.7%), verbal instructions (*n* = 13, 86.7%), modeling, and demonstrations (*n* = 13, 86.7%); repetition (including role playing) and feedback were less common (*n* = 5, 33.3%). The representatives of three organizations reported using other training strategies, such as video feedback, formal training on a specific strategy (e.g., picture exchange communication system), and observation of another caseworker. Asked when a caseworker's initial training was considered complete, representatives of four organizations (26.7%) said it was after a predetermined number of hours of training were completed and three (20.0%) others added that it was once certain predetermined competency criteria were satisfied. The respondents of six organizations (40.0%) identified no requirement in this regard.

Organization representatives indicated the percentage of caseworkers who were trained in EIBI through specialized programs offered to the organizations' staff. In fact, for four organizations, over 60% of caseworkers were reported to have participated in a specialized provincial training program offered in collaboration with the MSSS. Nonetheless, it should be noted that for three organizations, between 41% and 60% of their caseworkers were reported to have received this training, whereas the proportions reported for three other organizations were between 1% and 20%. Furthermore, the representatives of two organizations mentioned that no employee had received this training.

Supervision provided. The frequency of supervisions provided by the organization most reported by caseworkers (*n* = 43, 39.4%) was every two to four weeks. Twenty-nine caseworkers (26.6%) said supervisions took place only once a month. The other respondents reported varied

frequencies, as indicated in Table 2. According to the representatives, supervisions were offered to caseworkers monthly in five organizations (27.8%) and weekly in four organizations (22.2%). In the other organizations, reported frequency varied. The supervision frequency reported by the representatives was slightly higher than that reported by the caseworkers.

Table 2

Frequency of Supervisions Provided to Caseworkers

	Caseworkers		Representatives	
Variable	Absolute frequency (*N*)	Relative frequency (%)	Absolute frequency (*N*)	Relative frequency (%)
Each week or more	5	4.6	5	33.3
Every 2 to 4 weeks	43	39.4	1	6.7
Monthly	29	26.6	5	33.3
Every 4 to 6 weeks	6	5.5	-	-
Every 6 weeks	5	4.6	1	6.7
Every 6 to 8 weeks	5	4.6	-	-
Every 3 months	4	3.7	-	-
Every 6 months	1	0.9	-	-
On request			1	6.7
Other	11	10.1	-	-

Missing data			2	13.3
Total	109	100.0	15	100.0

Respondents were asked, “Why a supervision system?” The following themes emerged from the analysis: 1) quality of services, 2) professional training and support, 3) support for parents and partners, 4) support for interventions, and 5) support during problem situations. Training and professional support were the reasons that were most mentioned by respondents in both categories. Results regarding the main reasons for the supervision system that are closely linked to competency drivers indicated some differences in perceptions between caseworkers and representatives (see Table 3). In fact, the need to ensure quality services and program implementation fidelity was reported in greater proportions by representatives than by caseworkers. One representative noted supervision helped *to maintain quality and integrity of programming*. Another representative added, *to ensure the program is implemented faithfully*. Identification and review of intervention objectives and means, as well as an outside view of the intervention were the reasons most reported by the caseworkers, as seen in various comments: *to ensure an external perspective to quickly correct involuntary errors*; *to modify or add work objectives*; *to determine means and objectives*. Several other reasons were mentioned less frequently by all respondents (e.g., to identify the caseworker’s strengths, challenges and discomfort, or to evaluate parents’ and daycare centers’ satisfaction).

Table 3

Main Reasons for a Supervision System

	Caseworkers	Representatives

	(*N* = 109)		(*N* = 15)	
Variable	*n*	%	*n*	%
Quality of services				
Ensure quality of services	17	15.9	4	26.7
Ensure program implementation fidelity	15	14.0	4	26.7
Professional training and support				
Training and support for professional development	34	31.8	4	26.7
Support for the intervention				
Identify and review objectives and means	30	27.5	2	13.3
Ensure the child's progress	12	11.2	2	13.3
Have an outside perspective on the intervention	24	22.4	2	13.3

For the open-ended question, "What contents are addressed during the supervision meetings?", answers were categorized based on the following themes: 1) clinical process; 2) intervention; 3) parents and partners; 4) child's characteristics, development, and functioning; 5) problem situations; and 6) organization of services and support for the caseworker. Monitoring progress and reviewing objectives, examining observation data, as well as information on the child's development and general functioning were reported by participants in both categories. Caseworkers' and representatives' answers are presented in Table 4. Collaboration with parents and intervention strategies were reported more often by representatives. For example, for one representative, the contents addressed during supervisions highlight the following elements:

review of scores, difficulties experienced when conducting sessions with the children, queries from parents, caseworker partners, and adjustments to the program. However, the fact that the general clinical process was addressed in the meetings was mentioned more frequently by the caseworkers.

Table 4

Content Addressed During Supervisions

	Caseworkers (***N*** = 109)		Representatives (***N*** = 15)	
Variables	*n*	%	*n*	%
Clinical process and intervention				
Monitoring progress and reviewing objectives	52	47.7	12	80.0
Observation data	27	24.8	3	20.0
General clinical process	35	32.1	1	6.7
Intervention strategies	24	22.0	11	73.3
Parents and partners				
Collaboration with parents and partners	15	13.8	9	60.0
Child's characteristics, development, and functioning				
Child's development and general functioning	21	19.2	3	20.0
ASD characteristics	2	1.8	2	13.3

Support for caseworkers				
Problem situations	17	15.6	3	20.0

Factors that favor EIBI implementation

Data collected from respondents helped put into perspective factors that favor EIBI implementation. They were asked the following question: "In your opinion and in order of importance, what three factors foster EIBI implementation the most in your organization?" For caseworkers, the factors that favor program implementation the most mainly concerned dimensions related to organizational support, intervention protocol, and partners' collaboration. Representatives mostly reported factors associated with dimensions related to organizational support and to the implementers. The results concerning the main factors favoring implementation and that are associated with competency drivers are presented in Table 5.

Organizational support. Caseworkers cited teamwork (*n* = 31, 29.8%), supervision, clinical support (*n* = 30, 28.8%), and training (*n* = 20, 19.2%) as the factors that most favor implementation. Caseworkers also highlighted the budgets and resources invested in EIBI services (n = 8, 7.7%) as factors that favor implementation. Representatives emphasized team training (*n* = 10, 66.7%), as well as supervision and clinical support (*n* = 8, 53.3%). Thus, participants in both categories recognized the importance of training and supervision as beneficial supports for intervention implementation.

Implementers. For several caseworkers (*n* = 18, 17.3%), experience with and knowledge of the program were factors that favor EIBI implementation. Representatives of many organizations mentioned that caseworkers' enthusiasm (*n* = 8, 53.3%) helps to favor good program implementation. They also emphasized stability, availability (*n* = 5, 33.3%), experience

and knowledge (*n* = 3, 20.0%). Thus, respondents in both categories underscored staff experience and knowledge as factors favoring EIBI implementation.

Partners. Caseworkers mentioned collaboration with partners, including daycare centers (*n* = 28, 26.9%), and with parents (*n* = 26, 25.0%) as factors that facilitate implementation. A few representatives mentioned aspects related to the partners, for example, training daycare staff, as the following comment illustrates: *daycare centers with staff (paraprofessionals and educators) who have specialized technical training.*

Table 5

Main Factors That Favor EIBI Implementation According to Respondents

	Caseworkers (***N*** = 109)		Representatives (N = 15)	
Variable	*n*	(%)	*n*	(%)
	Organizational support			
Team training of the team	20	19.2	10	66.7
Supervision / clinical management	30	28.8	8	53.3
Interdisciplinarity	16	15.4	1	6.7
Team work	31	29.8	1	6.7
Budget and resource	8	7.7	0	0
	Implementers			

Motivated, dynamic, conscientious, and enthusiastic caseworkers	9	8.3	8	53.3
Staff stability/availability	3	2.9	5	33.3
Staff's experience/knowledge	18	17.3	3	20.0
		Partners		
Daycare centers	28	16.9	N/A	N/A
Parents	26	25.0	N/A	N/A

General perception of organizational support. Caseworkers were asked to evaluate, on a scale of 0-10, with 10 being the highest, whether they believe their organization provided the support necessary to faithfully implement the EIBI program. The mean score obtained was 7.96 (*SD* = 1.35; MIN = 4, MAX = 10). Data were missing for two caseworkers. The mean score for representatives was 6.71 (*SD* = 2.46, MIN = 0, MAX =10). Therefore, caseworkers' perceptions were slightly more positive than those of representatives.

Discussion

This study aimed to document competency drivers in EIBI in a real-life context, public social and health services, notably skills of the staff implementing it, as well as the training and supervision support they received. The results provided a view of the perspectives of two categories of actors in the program: the people implementing it, that is, caseworkers, and those representing the programs, that is, administrative staff.

Regarding the competency drivers more specifically, caseworkers and representatives appeared to have similar views of aspects concerning staff selection and training offered. In fact,

most caseworkers implementing the program had college-level technical training, which corresponds to three years of post-secondary education. Although it may be difficult to find an equivalent to the Quebec program in the Swedish school system, the level of training in Quebec was considered superior to the one reported by Eikeseth et al. (2012). Indeed, they reported that, for the most part, caseworkers applying the intervention daily in inclusive settings did not have academic degrees. In the Ontario study by Perry et al. (2008), most caseworkers were presented as having college- or university-level education, which is closer to the Quebec situation.

Aside from level of diploma or initial training, certain personal characteristics should be considered when staff is being selected, such as a person's interest in the program (Bertram et al., 2015). Few studies have focused on this specific aspect of competency drivers (Bertram et al., 2015, Fixsen et al., 2005). In the field of EIBI, some authors have examined caseworkers' motivation to use intervention procedures. Links have been observed between allegiance and the effects of EIBI among children (Klintwall et al., 2012). The same is true for Eldevik, Hasting, Jahr & Hughes (2012), who found that skepticism and lack of knowledge regarding EIBI hinder its implementation. Therefore, it is relevant to look at caseworkers' enthusiasm for EIBI, especially since supervision does little to change a person's motivation to implement EIBI (Långh et al., 2017). In the present study, caseworkers were reported to be generally enthusiastic about the program.

With regard to training caseworkers when they are hired, the results of this study demonstrated that initial training, although very widespread, varies considerably in terms of number of hours. Yet, the importance of training in EIBI is generally recognized as a way to improve the quality of interventions (Långh et al., 2017). Moreover, respondents in both categories considered training to be a factor that favors EIBI implementation. Generally, the training

described by respondents was inferior to that reported by Perry et al. (2008). Representatives of the Quebec organizations reported little use of certain teaching strategies, such as role playing or feedback. These results raise questions, given that those strategies are recognized as convincing practices to foster adult learning (Dunst et al., 2015; Snyder et al., 2018). Furthermore, the criteria related to successful completion of training pertained more to the number of hours than to competency criteria. In this regard, all caseworkers in the Ontario study reportedly received the same EIBI training when hired, that is, two weeks of training, with a manual, reference works, role playing, daily evaluations, and a final exam requiring a passing grade of 80%, as well as a field exam three months after the beginning of the intervention, also requiring an 80% passing grade. The same was true for specialized training in ASD. In fact, although provincial training was available at the time of the study, the proportion of caseworkers in Quebec who participated was low and varied considerably, according to organization representatives.

Supervision and coaching are considered to be factors that facilitate implementation of evidence-based practices in real contexts of intervention (Fixsen et al., 2005; Metz et al., 2015; Metz & Bartley, 2012; Metz et al., 2013). Many respondents in this study considered training and support for professional development to be one of the purposes of supervision. Nonetheless, results of this survey suggest a heterogeneity of practices. This is especially notable for the frequency of supervisions reported by caseworkers and representatives alike. Indeed, this is consistent with the results obtained during the first phase of the project, which involved only representatives of the organizations (Paquet et al., 2017). For several organizations, this frequency by far exceeds that reported in the literature (Eikeseth et al., 2009; Perry et al., 2008). Yet, according to Långh et al. (2017), supervision may compensate for lack of formal training. In fact, supervision helps to improve knowledge and fidelity of the intervention (Symes et al., 2006). Moreover, respondents

from both categories in the current study believed that supervision and clinical support favor EIBI implementation.

An examination of respondents' perceptions regarding factors that favor EIBI implementation showed that several activities related to *competency drivers* were considered priorities. This is consistent with Fixsen et al.'s (2005) model, which stipulates that those activities are important drivers of quality implementation. However, contrary to Fixsen's model, respondents presented fidelity evaluation as an integral part of supervision. Indeed, representatives mentioned that supervision is a process meant to ensure intervention quality and fidelity. This view of supervision was, however, rarely reported in these terms by caseworkers. Instead, they placed more emphasis on the support they received through supervision with respect to planning the intervention and having an outside view of their practice. This difference in perception is consistent with the respondents' roles in each of the categories; caseworkers are directly involved in implementation and address the issue mainly in terms of support for their practice, whereas representatives have clinical management roles and are thus concerned with supporting implementation.

It is surprising to see that collaboration with parents was reported mostly by representatives as a content of supervision, whereas collaboration with partners (parents and daycare centers) was mentioned mostly by caseworkers as a factor that favors implementation. It may be hypothesized that caseworkers believe collaboration with parents and daycare centers to be a factor that supports EIBI implementation but that is not central to supervision meetings, even though representatives believe it should be.

Study limitations

One limitation of this study stems from the method used. In fact, the information was reported by program implementers and by those responsible for the programs. The research team took no direct measure to document the support, training, and supervision provided by the organizations offering EIBI. At the time of the study, the organizations did not have official information on the support provided to caseworkers. Furthermore, the instructions or modalities for such measures would likely have differed from one setting to the next. Obviously, the results must be interpreted in their context and are difficult to generalize to other contexts than that of Quebec intervention services. In addition, some limitations are inherent to the types of data and analysis. Survey studies cannot guarantee sampling or a nonresponse bias, despite the response rate being over 60% in the present study. Representatives of practice settings were consulted to ensure understanding of the survey questions, but no other formal validation process was carried out. Moreover, although the addition of open-ended questions can permit to better understand the perception of respondents about a topic, they add certain analytical challenges. An inductive analysis was used for open-ended questions. Despite the use of an iterative method to establish a consensus on the classification of the data, it is possible that the latter were influenced by their own expectations and theoretical references. It was not possible to triangulate this qualitative data with other sources of information.

Implications for practice

This study contributes to reflections on organization of EIBI services to establish conditions that favor good program implementation. Our results highlight the importance of focusing on the issue of *competency drivers*, notably by formalizing guidelines for selection, training, and supervision with a view to standardizing practices. In fact, the present study emphasizes the need to propose a model that supports the practice of caseworkers who apply EIBI,

while specifying both support modalities and content. To this effect, it seems essential that caseworkers and representatives have access to clear documentation concerning the favored EIBI model, as proposed by Dionne et al. (2016a). The documentation should explain the intervention protocol and provide details of individuals who implement the intervention (e.g., selection criteria) and of training (e.g., criteria for success) and support (e.g., supervision and coaching modalities) provided. In this regard, some authors have suggested models that could be adapted to the context of EIBI. For example, Snyder et al. (2015) proposed a practice-based coaching model aimed at supporting implementation of evidence-based early intervention practices. This coaching model emphasizes the importance of feedback, an important strategy to support the implementation of new practices.

Relevance and future research avenues

This study has helped provide a portrait of the implementation of a program in large-scale services, in terms of the support offered to implementers. To date, there has been little documentation on this aspect of EIBI implementation (Paquet et al., 2017). Although several authors have highlighted the importance of training and supervision to support quality implementation of early intervention, few studies have evaluated this component of EIBI programs. Thus, it is necessary to assess how training- and supervision-related variables influence the effects of the intervention on young children with ASD. Furthermore, it appears necessary to develop, set up, and evaluate models of support for the practice adapted to large-scale services for caseworkers who apply EIBI on a daily basis.

Lesson learned

In light of the results obtained in this project, it seems essential to assign greater importance to professional development, not only when implementing recognized practices, but also when evaluating implementation and program effects. Stakeholders' perceptions in keeping up with the scientific literature on implementation: selection, training, supervision, and coaching are essential aspects of plans to support implementation of evidence-based practices (Snyder et al., 2015). Therefore, competency drivers must be addressed within EIBI services, in terms of support for implementation, and should be systematically evaluated within an evaluation of the implementation process. Some tools have been developed to assist organizations in assessing implementation drivers (Fixsen, Blase, Naoom, & Van Dyke, 2015b; Fixsen, Blase, Naoom et Duda, 2015). But, as Odom et al. (2013) suggest, it is necessary to develop, evaluate, disseminate, and support implementation of professional training models that increase caseworkers' use of evidence-based practices and that are adapted to large-scale public autism services.

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