PROMOTING THE QUALITY OF INDIVIDUALIZED EDUCATION PLAN (IEP) AND INDIVIDUALIZED FAMILY SERVICE PLANS (IFSP) GOALS AND OBJECTIVES

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RESUMO

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Uma intervenção eficaz em intervenção precoce é crucial para que todas as crianças consigam alcançar o seu potencial desenvolvimental e funcional. A ciência do desenvolvimento evoluiu de um modelo centrado na criança para um modelo centrado na família, que suporta o desenvolvimento total de competências e funcionalidades. O mesmo não parece ter acontecido com as práticas já que as crenças e valores dos profissionais não parecem ser concordantes com as práticas recomendadas. O objetivo deste trabalho é contribuir para a compreensão e disseminação de estratégias que permitam diminuir o hiato existente entre a teoria e a prática, através de uma formação em Intervenção Precoce Baseada nas Rotinas (IPBR; McWilliam, 2010).

Com base no primeiro estudo, que avaliou a qualidade dos objetivos dos programas educativos individuais (PEI) em Portugal e produziu conhecimento inovador e consistente com estudos anteriores e posteriores que demonstravam que tanto os PEI como os planos individuais de intervenção precoce (PIIP) incluíam objetivos de baixa qualidade, desenvolvemos uma formação assente na IPBR. Esta foi projetada especificamente para melhorar a qualidade dos objetivos dos PEI e dos PIIP e diminuir o seu número excessivo. O segundo estudo fundamenta e descreve, em detalhe, a formação projetada, permitindo futuras replicações, e apresenta os resultados na melhoria dos objetivos de 80 profissionais. A entrevista baseada nas rotinas (EBR; McWilliam, 2005) é uma parte fundamental da IPBR e, como tal, teve um foco especial ao longo da formação. A ferramenta mais importante no ensino da EBR foi a lista de verificação da EBR (Rasmussen & McWilliam, 2010), cujas propriedades psicométricas foram investigadas no terceiro estudo. Por fim e no último estudo, centrámo-nos novamente na eficácia da formação e investigámos (a) a validade social, (b) os *outcomes* a médio prazo da eficácia da formação com inclusão de uma condição de controlo e (c) as variáveis associadas ou explicativas das mudanças na qualidade dos objetivos.

Os nossos resultados contribuíram para o campo da intervenção precoce, e especificamente da IPBR (e.g., Hwang, Chao, & Liu, 2013; McWilliam, et al., 2009). Isto porque corroboraram e adicionaram evidências sobre a eficácia da formação nas práticas recomendadas e baseadas na evidência (e.g., Campbell & Halbert, 2002; Jung & Baird 2003). Também encontrámos suporte para (1) a eficácia da nossa formação na promoção de objetivos de qualidade nos PEI e nos PIIP, (2) o papel central da EBR neste processo, e (3) a fiabilidade da lista de verificação da EBR como um instrumento de implementação.

A realização deste estudo permitiu dar esta formação, que se revelou eficaz, a mais de 200 profissionais, trabalhando com cerca de 40% das Equipas Locais de Intervenção (ELI) da área de Lisboa e Vale do Tejo, onde vive, aproximadamente, 35% da população de Portugal continental.

ABSTRACT

Effective intervention is crucial to achieve every child's developmental and functional full potential in Early Childhood Intervention (ECI). Early childhood development science has evolved from a child-centered and remedial model to one that is family-centered and supportive of capacities and functionality. Practices in the field have not changed at the same rate as the research, revealing a gap between professionals' beliefs and values and recommended practices. The intent of this work was to contribute to the understanding and dissemination of strategies that bridge the gap between research and practice through in-service training in Routines-Based Early Intervention (RBEI, McWilliam, 2010).

The first study assessed the quality of Portuguese-IEP goals and objectives and produced knowledge that was new but consistent with previous and subsequent studies showing that both IEPs and IFSPs included low-quality goals and objectives. We then developed an in-service training program based on RBEI, specifically designed to improve the quality of IEP/IFSP goals and objectives while decreasing their excessive number. The second study substantiated and described in detail the above mentioned training, allowing for future replication, and presented findings about the improvement of the goals and objectives from 80 professionals. The Routines-Based Interview (RBI; McWilliam, 2005) is a centerpiece of the RBEI and, therefore, was the main focus throughout the training program. The most important tool to teach trainees on the RBI was the RBI Implementation Checklist (Rasmussen & McWilliam, 2010), the psychometric properties of which were investigated in the third study. Finally, in the last study, we turned once more to training effectiveness and investigated (a) the social validity, (b) the medium-term outcomes of the training with inclusion of a control condition, (c) and variables associated with or explaining changes in the quality of goals and objectives.

Our results contribute to the ECI field to the extent that they corroborate and add new evidence on the effectiveness of in-service training in recommended and evidence-based practices in ECI (e.g., Campbell & Halbert, 2002; Jung & Baird 2003), and specifically in RBEI (e.g., Hwang, Chao, & Liu, 2013; McWilliam, et al., 2009). Our findings provide support for (1) the effectiveness of our training in promoting the quality of EIPs/IFSPs goals and objectives, (2) the central role of the RBI in the process, and (3) the reliability of the RBI Implementation Checklist as a good implementation fidelity instrument.

In conducting this study, we provided this training, which was shown to be effective, to over 200 professionals working in the field, training about 40% of the LITs of the Lisbon and Tagus Valley Region, were about 35% of the Portuguese continental population lives.

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CHAPTER I

General Introduction

> As the rapidly evolving science of early child development continues to grow, its complexity will increase and the distance between the working knowledge of service providers and the cutting edge of the science will be staggering. The professional challenges that this raises for the early childhood field are formidable. (Shonkoff & Phillips, 2000, pp.12)

Early Childhood Development

Assuming a constructivist perspective, realities are apprehended in the form of multiple, intangible mental constructions, socially and experientially based. They are local and specific in nature and their form and content are dependent on the individual or group that owns the constructions, which are changeable like their associated "realities". Investigator and the investigated object are interactively connected, in a transactional and subjective relationship, in the process of a consensus construction more informed and sophisticated than the previous constructions. These different constructions are interpreted using conventional hermeneutical techniques and are compared and contrasted through a dialectical interchange (Guba & Lincoln, 1994).

Psychology studies the "changing relations among psychological and environmental aspects of holistic units" (Altman & Rogoff, 1987), aspects that coexist as intrinsic characteristics inseparable from the whole. Change is seen as a characteristic of the holistic units, and is not associated with an ideal predetermined status that, when achieved, implicates the absence of new changes. The transactional vision in psychology is centered in persons' configurations, psychological processes and contexts, and changing relationships (Altman & Rogoff). Theoretical models prevalent in Developmental Psychology consider human development as a result of processes of reciprocal and dynamic interaction between the person and the context. This vision is central to the transactional model (Sameroff & Fiese, 1990, 2000) and the bioecological model (Bronfenbrenner & Morris, 1998).

In the transactional model, development is seen as a complex function of the interaction between the child and the environment over time, resulting in continuous and dynamic interactions of the child and the experiences offered by the child's family and social context. Development outcomes are, therefore, the product of the combination of an individual and his experience, with equal emphasis given to the effects of the child and the environment, so that the experiences provided by the environment and the child cannot be seen as independent (Sameroff & Fiese, 1990, 2000). This model also introduces the regulation model of development, according to which the child's behavior is a result of transactions between genotype (source of biological

organization), phenotype (the child) and environtype [source of external experiences - subsystems that do not only transact with the child, but also between them - and that operates through codes: (a) the cultural code, which corresponds to socialization, control, and support of culture beliefs; (b) the family code, which corresponds to patterns of family interaction and intergenerational history; and (c) the personal code, which corresponds to the beliefs, values, and personality of the parents] (Sameroff & Fiese). From birth the child is involved in relationships with others and it is by external regulation that self-regulation will develop and progressively take ground. Considering the complexity of the regulation, the purpose, the level, and the nature of representations of the child's contribution, Sameroff and Fiese (1990) divided the development regulations in three categories, organized at different levels of the environtype: (1) Macroregulations, that are predominantly large intentional changes in experience and that continue for long periods of time, and the modal form of regulation in cultural code; (2) Miniregulations, that are predominantly daily activities of care, and the modal shape of the family code, and (3) Microregulations, that are almost automatic patterns and momentary interactions that take place at the interpersonal level (Sameroff & Fiese, 1990, 2000).

According to the bioecological model, human development is seen as taking place "through processes of progressively more complex reciprocal interaction between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment" (Bronfenbrenner & Morris, 1998, p. 996). The effectiveness of an interaction depends on its regularity over extended periods of time. These forms of continued interaction in the immediate environment are called proximal processes (Bronfenbrenner & Morris). The proximal processes function as engines of development, involving a transfer of energy between human beings in development and persons, objects, and symbols of the immediate environment. The transfer can occur in one direction or in both, separately or simultaneously. The proximal processes are distinguished in terms of two types of development results produced: (1) competence, related with demonstrated acquisition of knowledge, skills, and abilities; and (2) dysfunction, related with recurrent manifestations of difficulties (Bronfenbrenner & Morris). To understand the difference between these two types of results we can turn to the dimensions of the extent of contact maintained between the developing person and proximal processes in which the person engages (exposure), and that are: duration, frequency, interruption (predictability), timing (adjustment) and intensity (Bronfenbrenner & Evans, 2000). The influence of proximal processes depends on its four interrelated elements - form, power, content, and direction - that vary systematically as a function of the characteristics of the developing person, the immediate and remote environmental context in which the processes are taking place, the social continuities and changes that occur throughout the course of life, the historical period in

which the person lives, and the nature of development outcomes in consideration (Bronfenbrenner & Evans).

Recently, Sameroff (2010), advocating that researchers need to be aware that they are just studying a part of the whole which consists of multiple interacting dynamic systems, proposed a unifying theory of development. This theory integrates in a comprehensive view, the models presented above (the transactional model – a regulation model - and the bioecological model – a contextual model), the personal change model (seen as a process of stages in which a period of stability of functioning is followed by a transition to a structurally different period of stability presumed to reflect a wider cognitive and social functioning), and the representational model (which describes how representations are an internal summary of the external world, more or less elaborate, that serve an adaptive function of bringing order to the changing world, producing a set of expectations of how things should fit), containing, according to the author, the influences of life known path (Sameroff).

Sameroff (2010) formulates the structure of this model from the biopsychosocial aspects of the person in context. These aspects include a self-regulation system, a biopsychological self system (composed of psychological domains overlapping in cognitive and emotional spheres of intelligence, mental health, social competence, and identity, among others, which are facilitated by, and interact with, a set of interacting biological processes), which interacts with the external regulation system, composed by the different contexts of interaction of the social ecology, including family, school, neighborhood, community, global and geopolitical influences. The formulation of the process adds the temporal dimension of personal change to the biopsychosocial model. All aspects of the model described above are impregnated by representations of the interacting identities, attitudes, beliefs, and attributions of child, the family, the culture and the organizational structure of social institutions. The unifying theory of development specifies what will be required to explain any phenomenon of development without making specific predictions (Sameroff).

These models emphasize the importance of reciprocal influence processes, which occur in the contexts in which the child directly moves, on development results. The transactional model emphasizes the importance of the experience of regulation promoted by caregivers in self-regulation, namely through micro and miniregulations (Sameroff, 2010; Sameroff & Fiese, 1990, 2000). In turn, in the bioecological model (Bronfenbrenner & Evans, 2000), the dimensions of the contact maintained between the developing person and proximal processes in which the person engages allow for the recognition of the kind of results in development (competence vs. dysfunction). Based on the ecological model, Garbarino and Ganzel (2000) define sociocultural opportunities and risks as social influences operating in psychological or sociological terms.

Opportunities for development in a microsystem (the immediate context in which the individual develops) are related to the availability of continuous, reciprocal, and multifaceted relationships that enhance play, work, and love over time; in turn, opportunities within a mesosystem depend on the number and quality of its connections.

The crucial role that families and communities play in the process of reciprocal influence, highlighted by the models referred above, providing the supportive relationships and positive learning experiences that children need for a healthy development is supported by decades of research. This extensive, complex, and multidisciplinary body of research was reviewed in the late 2000 by a committee on integrating the Science of Early Childhood Development, established by the National Research Council and the Institute of Medicine, and culminated in a report entitled "From Neurons to Neighborhoods: The Science of Early Childhood Development"(Shonkoff & Phillips, 2000). The report conclusions enhance: (1) the dynamic and continuous interaction between genetics and environment as well as the significant developmental impacts of early life experiences, caregiving relationships, and environmental threats; (2) how the early relationships are crucial to a healthy development, being the source of adaptation or dysfunction; (3) the extraordinary development, during the first months and years of life, of emotional, social, regulatory, and moral capabilities as well as linguistic and cognitive skills, all intertwined; and (4) that well-designed interventions, that combine child-focused activities with explicit attention to parent-child relationships, with clearly defined (and measurable) goals matched by clear delineation of intervention strategies, can shift the odds in favor of more adaptive developmental outcomes (Shonkoff & Phillips).

The National Institute of Child Health and Human Development (NICHD) began in the 90s a large scale, longitudinal, and prospective study on the effects of early child care on children's development, the Study of Early Child Care and Youth Development (SECCYD) (NICHD Early Child Care Research Network, 2006). The results of this study, designed with the aim of describing the associations between quality, quantity, and type of care, using a single model, and comparing the magnitude of the effects of these aspects with the effects of parenting, showed that both the family and early childhood education and care affect the development of children attending, and allowed for the identification of specific features of family and care that affect children's development (see NICHD Early child Care Research Network, 2006).

Early Childhood Intervention

Early childhood intervention (ECI) is premised in the belief that formalized services can increase adaptive development outcomes in children that are experiencing a delay between what they are able to do across one or more developmental domains and what is expected for their

age, regardless of the reason for this delay (biological risk, environmental risk, established risk, or a combination) (Bruder, 2010; Shonkoff & Phillips, 2000). This population is as heterogeneous as the general population regarding the diversity of backgrounds, family structures, and developmental disabilities and, therefore, in the report mentioned above early childhood intervention is described as "*an individualized strategy designed to increase the probability of a desired outcome, and not as a developmental panacea for all children under all circumstances. It is the art of the possible, based on the science of early childhood development*" (Shonkoff & Phillips, p. 32).

By the end of 2000, the Division for Early Childhood (DEC) published an update on the work conducted in 1993 regarding Recommended Practices in Early intervention and Early Childhood Special Education. They field validated 240 practices synthesized from the information collected through (1) the review of research literature for practices that resulted in improved outcomes, from over 1000 articles from 48 journals; and (2) the conduction of focus groups with researchers and stakeholders (parents, practitioners, and administrators). These recommended practices are organized in 7 strands (5 of direct service practices and 2 of indirect supports) and grouped under unifying statements rooted in family-centeredness (where professionals and family work collaboratively and family is expected to make decisions regarding planning, delivery, and evaluation), and in a clear focus on natural and inclusive environments (where children's development is promoted through systematic procedures within and across environments, activities, and routines) (Sandall, McLean, & Smith, 2000).

Research continued to ground these standards. A meta-analysis on family-centered practices by Dunst, Trivette, and Hamby (2007) concluded that these should incorporate respect for families' decision making and opportunities for families to make choices, since the effect of professional practices on intervention outcomes is mediated by self-efficacy beliefs. In the same year, Dunst (2007) presented a definition of Early (Childhood) Intervention, based on these standards, as:

> the experiences and opportunities afforded infants and toddlers with disabilities by children's parents and other primary caregivers that are intended to promote the children's acquisition and use of behavioral competencies to shape and influence their prosocial interactions with people and objects. (p. 162)

An U.S. workgroup assembled by the Office of Special Education Programs Technical Assistance (OSEP TA) Community of Practice on Part C Settings: Services in Natural Environments produced, among other documents, the Mission and Key Principles for Providing Early Intervention Services in Natural Environments (Workgroup on Principles and Practices in

Natural Environments (2008a), and Seven Key Principles: Looks Like/Doesn't Look like (Workgroup on Principles and Practices in Natural Environments (2008b), for providing high-quality early intervention services validated through research, model demonstration, and outreach projects. The seven principles are the following:

1. Infants and toddlers learn best through every day experiences and interactions with familiar people in familiar contexts.
2. All families, with the necessary supports and resources, can enhance their children's learning and development.
3. The primary role of service provider in early intervention is to work with and support the family members and caregivers in a child's life.
4. The early intervention process, from initial contacts through transition, must be dynamic and individualized to reflect the child's and family member's preferences, learning styles, and cultural beliefs.
5. Individualized Family Service Plans (IFSP) outcomes must be functional and based on children's and families' needs and priorities.
6. The family's priorities needs and interests are addressed most appropriately by a primary provider who represents and receives team and community support.
7. Interventions with young children and family members must be based on explicit principles, validated practices, best available research, and relevant laws and regulations.

Despite the consensual nature of the content of these different documents, research shows that practices often do not match evidence-based or recommended practices, namely family centeredness and functionality, in early childhood intervention (Campbell & Halbert, 2002; Dunst, 2007). Aiming to understand the persistent gap between recommended and actual practices, in this work we focus on the features of the goals and objectives that drive intervention efforts within ECI and Early Childhood Special Education, addressing one of the key principles for providing high-quality early intervention services in natural environments. Such a focus is based on the assumption that poor intervention outcomes for children can be, at least partially, explained, as Goodman and Bond (1993) argued, by poorly written goals and objectives that are difficult to link to the program and its evaluation. Note that goals and objectives have been found to present low functionality and measurability as well as an insufficient focus on natural routines and environments in both Individualized Education Programs (IEP; Goodman & Bond, 1993;

Grisham-Brown & Hemmeter, 1998; Pretti-Frontczak & Bricker, 2000; Yell & Stecker, 2003), and IFSP (Bailey, Winton, Rouse, & Turnbull, 1990; Jung & Baird, 2003; McWilliam et al., 1998).

Goals and Objectives

Acording to Hornby, Ashby, and Wehmeier (2001), a goal is "something that you hope to achieve: *to pursue/ achieve a goal";* an objective is "something that you are trying to achieve: *the main / primary / principal objective; to meet/ achieve your objectives",* and an outcome is "the result or effect of an action or event". Throughout this dissertation, the terms "goals" and "objectives" will be used interchangeably to refer to outcome statements that are written in IEPs and IFSPs and that specify the desired effects of the intervention program or plan.

When written IEP goals and objectives began to be a requirement, pre-service training in this area was not provided in special education and school psychology programs and there were mainly three procedures for writing them: (1) classical behavioral objectives, with the constraint that educators did not seem to know what behavior to measure and got into a "more is better" exercise; (2) develop goals through norm-reference tests, that do not meaningfully measure any relevant functional skills; and (3) broad, vague, but "understandable" goals, that do not specify how progress will be measured and constrain progress evaluation (Shinn & Shinn, 2000). In some cases, these dated ways of writing goals continue to be observed to the present day. Additionally, multidisciplinary teams with discipline specific views of how to write goals and objectives have struggled with this issue.

In the goal setting theory, goals are described as immediate precursors and regulators of human action, meaning that what people will do and how well they will perform in a task is influenced by the goals they have (Locke & Latham, 1990). Even though the vast body of research that supports this theory comes from industrial and organizational psychology (Locke & Latham, 2002), we can find some supporting evidence in rehabilitation (Playford, Siegert, Lavack, & Freeman, 2009). Its specific contribution comes from the fact that it "specifies the factors that affect goals and their relationship to action and performance" (Locke & Latham, 1990, p. 6). According to this theory, there are four mechanisms that mediate goal setting effects: three direct mechanisms brought into play more or less automatically (effort, persistence, and direction) and one indirect mechanism more conscious or deliberated (task strategy development) (Locke & Latham, 1990). Thereby, goals: (1) direct attention and effort toward activities that are relevant to goals and away from the ones that are irrelevant, serving a directive function, particularly if goals are clear and specific - direction; (2) affect intensity of effort by leading to a greater physical effort, rate of work, subjective effort or physiological arousal in more difficulty goals, providing that the individual has the necessary abilities and knowledge, serving an energizing function -

effort; (3) affect persistence, prolonging effort over time in harder goals than in easier or vague ones – persistence; and (4) affect action indirectly by activating stored knowledge and skills relevant to the task and triggering the development of knew task strategies, active problem-solving, and creative insights – task strategy development (Locke & Latham, 1990, 2002). These mechanisms are moderated by (1) goal commitment that refers to people's determination to attain the goal and is facilitated by the next two moderators; (2) importance, that translates how important is the goal attainment to the person and is benefited from the information exchange that arises from participating in decision-making; and (3) self-efficacy, that is how the person evaluates his or her capacity to determine, organize, and execute the necessary courses of action, and that can be raised by adequate training, role modeling, and information about strategies, among others; (4) feedback regarding progress in relation to the goal, which allows for the adjustment of level or direction of the effort, or of the performance strategies; and (5) task complexity, that states that complex tasks require greater use of cognitive and other skills and can benefit from the decomposition in proximal outcome goals and feedback (Lee, Locke, & Latham, 1989; Locke & Latham, 2002).

These mechanisms and moderators theoretically support the criteria to meet high-quality goals described by researchers in the early childhood intervention field such as Bailey et al. (1998), Jung and McWilliam (2005), McWilliam (2010), and McWilliam et al. (1998): (a) be appropriate for the context, supporting natural caregivers' and families' routines and reflecting real-live situations; (b) reflect family priorities; (c) address meaningful skills necessary or useful for the child's participation in family, classroom, and community routines; (d) be free of jargon; (e) be specific and measurable, with meaningful criteria for generalization and timeliness. Thus, our belief is that, when services and professionals assimilate family-centeredness and functionality premises, goals will be of higher quality because, as parents and caregivers are effective participants in the process of assessment, planning, and implementation, the chosen goals will be of actual importance to them, they will be more committed with the goals, and present increased self-efficacy. In addition, professionals have a fundamental role in adjusting task complexity through feedback and disassembling of more complex goals. Goal-setting theory has also translation in the actual implementation of the goals and in goals achievement. However, that is out of the scope of our task with this dissertation.

Present Work

Research shows that the quality of U.S. IEP and IFSP goals is low (Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Jung & McWilliam, 2005; Pretti-Frontczak & Bricker, 2000; Yell & Stecker, 2003), raising concerns about the effectiveness of interventions based on

such goals in enhancing children's developmental outcomes and the need of specific professionals' training in this area. Considering the scarcity of studies that investigated the quality of Portuguese EIP and IFSP goals and objectives, in the first study we aimed to assess the quality of goals and objectives developed by Portuguese professionals in early childhood special education, thereby confirming if their quality level is in line with international studies.

Having confirmed the low quality of Portuguese IEPs' goals and objectives and hypothesizing that such low quality is associated with a lack of full understanding of family-centered practices, we set out to develop a training targeting ECI professionals skills in writing high-quality goals and objectives, by addressing knowledge and skills consistent with a family-centered conceptual framework (Jung & McWilliam, 2005). In designing this training we assumed that even more important than how goals and objectives are written is the process that leads to their setting and how it incorporates professionals and families beliefs and underlying philosophy. Thus, the second study describes a training program focused on improving the quality of goals and objectives developed by early childhood intervention professional by using the Routines-Based Early Intervention approach (RBEI, McWilliam, 2010). In Chapter III, we describe how such training was developed, piloted, and implemented. We further describe its content and methods, detailing the specific strategies for adult learning in which we grounded our options. Finally, the first training results are presented.

The Routines-Based Interview (RBI) is a central component in the RBEI and, consequently, in the training which is the centerpiece of the work presented in this dissertation. As part of our effort to understand how to reliably assess the fidelity of implementation of this fundamental process, we investigated the psychometric properties of the RBI Implementation Checklist (Rasmussen & McWilliam, 2010), a measure used in the training to monitor the implementation of the RBI and produce feedback for trainees. Therefore, the third study reported in this dissertation used Rash Analysis to address this goal, thus including a methodological contribution to the field.

The fourth and final study was designed to investigate the social validity of the training and further understand its effectiveness. We listed to participants "voices" by asking them about the strengths and weaknesses of the training and thus getting a deeper understanding of their satisfaction. We investigated the medium-term outcomes of the training by adding a comparison condition (i.e., data from a control group) that helped eliminate alternative explanations for the obtained effects. Finally, we investigate the associations between improvement in the quality of IEP/IFSP goals and objectives and selected features of trainees and training procedures, aiming to further comprehend the conditions for its effectiveness.

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CHAPTER II

Quality of Individualized Education Program Goals of Preschoolers with Disabilities[i]

[i] Boavida, T., Aguiar, C., McWilliam, R. A., & Pimentel, J. (2010). Quality of Individualized Education Program goals of Portuguese preschoolers with disabilities. *Infants and Young Children, 23*(3), 233–243.

ABSTRACT

Individualized education programs (IEPs) are a fundamental mechanism for making special education services unique for the child and for enhancing the developmental outcomes of children with disabilities. If written IEP goals diverge, however, from recommended practices, they might result in ineffective interventions. This study investigated the quality of Portuguese IEP goals written for 83 preschoolers with disabilities attending public preschool classrooms from 21 school groups from the District of Lisbon, Portugal. The quality of IEP goals was measured using the Goal Functionality Scale III (McWilliam, 2009) and the IEP/Individualized Family Service Plan Goals and Objectives Rating Instrument (Notari, 1988). Results showed that IEP goals were too broad, lacked functionality and measurability, and did not appropriately address skills within the context of natural routines and settings. Moreover, findings indicate that measurability was slightly higher the more severe children's disabilities were and that autonomy (i.e., self-help) goals were somewhat more functional and measurable than were social, language, cognitive, and motor goals. Findings raise concerns about the effectiveness of interventions based on such goals in enhancing children's developmental outcomes and suggest the need for clear guidelines on the development of effective IEPs and for teacher training on developing high-quality goals.

INTRODUCTION

In Portugal, where special education schools have been progressively converted into (and accredited as) resource centers for inclusion (Ministério da Educação, 2007), special education and early intervention legislation emphasizes inclusion (Decreto-Lei n.º 3/2008; Decreto –Lei n.º 281/2009). The last national reports indicated that approximately 2% of children enrolled in public preschool had disabilities (Inspecção-Geral da Educação, 2009) and that 33% of preschool classrooms included at least one child with disabilities (Ministério da Educação, 2007).

Early childhood inclusion is a recommended practice because it embodies every child's right to full participation and, one hopes, to reaching his or her full potential (DEC/NAEYC, 2009). Positive results of inclusion are reported for both children with disabilities and children with typical development (Odom, 2000). Thus, the most appropriate intervention settings in early childhood are the contexts where same-age, typically developing children spend their time—that is, the family home and the child care or preschool classroom (Gamelas, 2003). Odom et al (2004) cite several studies suggesting that the inclusion of children with disabilities in preschool has benefits for children both with and without disabilities and for their families and communities. They note, however, that many of the benefits occur only with intentional and planned intervention. Wolery (2000) maintains that the acquisition of important developmental skills in children with disabilities is possible only through effective mediation by the adult, the establishment of individualized goals, and the definition of strategies to achieve and monitor them. DEC/NAEYC's first recommendation addresses the creation of high expectations for every child considering that sharing of such expectations leads to the selection of appropriate goals.

The individualized education program (IEP) has been a fundamental mechanism for the individualization of teaching. The goals and objectives of the IEP, if developed through a systematic evaluation process and directly connected to intervention, can contribute to the individualization of services and to improved development of children (Pretti-Frontczak & Bricker, 2000). Quality goals and objectives are important (a) for professionals and natural caregivers to know what, how, when, and where to teach; (b) for monitoring children's progress; and (c) for evaluating and reporting the effects of the intervention. IEP goals and objectives often diverge, however, from recommended practices, because they are poorly written and are not functional or contextualized (Grisham-Brown & Hemmeter, 1998; Pretti-Frontczak & Bricker; Yell & Stecker, 2003), potentially resulting in ineffective interventions for children (Goodman & Bond, 1993).

High-quality IEP goals and objectives must be family centered and reflect recommended practices, which means that they should (a) be context appropriate and supportive of natural caregivers and families' routines, (b) address skills necessary or useful to the child's participation in these routines, (c) be measurable (i.e., specific), (d) and have meaningful generalization and timeframe criteria (Bailey et al., 1998; Jung & McWilliam, 2005; McWilliam, in press; McWilliam et al., 1998).

Although in Portugal IEPs have been required by law since 1991 (Decreto-Lei nº 319/91), we were not able to find any Portuguese data concerning the quality of IEP goals and objectives. The recent Decree-Law number 281/2009, which established the national early childhood intervention system, included a very general requirement for an individual early intervention plan, with little guidance as to content. The other recent decree-law, number 3/2008 (Decreto-Lei nº3/2008), upgraded the 1991 special education law and included changes related to the process for developing IEPs and to the structure of IEPs: It required that IEPs be jointly developed by the classroom teacher, the special education teacher, and parents. The law also defined the International Classification of Functioning, Disability and Health – Children and Youth (World Health Organization, 2007; ICF-CY) as the method for documenting children's functioning and the environmental facilitators and barriers to social and educational participation. Despite these requirements, no official guidelines on the formulation of IEPs goals and objectives are provided, and professional training on writing high-quality outcomes for children is virtually nonexistent.

In this study, we aimed to (a) document the quality of the goals (or objectives when goals were merely indications of the developmental domain being addressed) in IEPs of Portuguese children with disabilities attending inclusive public preschool settings; (b) investigate the associations among children's severity of disability, teacher education and experience in special education, and the quality of IEP goals; and (c) investigate the quality of IEP goals as a function of developmental domain. Based on the literature mentioned earlier, we expected goals to be of lower quality when the child's disability was more severe and of higher quality when the teachers involved were better educated and more experienced.

METHOD

Participants

Data were collected from 21 randomly selected school groups from the existing 145 in the District of Lisbon (a District with around 2,200,000 inhabitants). In Portugal, a school group

is a conglomerate of schools across ages, with some groups having resources for specific needs. From the website of the *Direcção Regional de Educação de Lisboa* (Lisbon Regional Education Directorate), a list of the 145 school groups of the District of Lisbon was made. After assigning numbers to all groups, a random-number sequence (developed from an internet program) was applied. Letters of invitation describing the research and soliciting information about *inclusive* preschool classrooms (i. e., classrooms with at least one child with disabilities) in the school group were sent to the board of directors of the first 50 groups randomly selected. The sample-size goal was 100 children, determined through power analysis. Because of a low positive response rate (32%) from the first 50 groups, letters to the next 50 groups were sent. Once school groups expressed interest in the study, meetings with all the classroom teachers and the special education teachers from the interested school groups were held. In these meetings, written information describing the research and consent forms were distributed to all potential participants, including families of children with disabilities. The result of this recruitment procedure was 32 special education teachers from 21 school groups. (Classroom teacher participation was not relevant for this analysis).

Eighty-three preschoolers with disabilities participated, meaning their IEPs written by 32 special education teachers were collected. Therefore, IEPs were nested within teachers at a range of 1-8 per teacher. Teachers' age averaged 43.83 years (SD = 9.29), teachers' education averaged 17.41 years (SD =1.27), and teachers' experience in special education averaged 9.39 years (SD =6.42). Children's age averaged 67.24 months (SD = 13.36), and 37% of them presented global development delay, 25.9% were diagnosed with an autism spectrum disorder, 8.6% had cerebral palsy, 8.6% had multiple disabilities, and the remaining 19.7% had other types of disability.

Measures and Procedures

Special education teachers were instructed to complete a questionnaire about themselves and the child with disabilities, including a measure of children's (dis)ability , and to submit it with the child's IEP.

ABILITIES Index. The profiles of the children's abilities and limitations were based on the ABILITIES Index (Simeonsson & Bailey, 1991). ABILITIES is an acronym for a tool covering nine dimensions shown in Table 1. It was designed to include the following characteristics: (a) a relatively stable and comprehensive profile of a child's abilities in nine areas; (b) for each dimension or area, a definition of functioning by 6 ordinal levels of difficulty (1 = normal, 2 = suspected difficulty, 3 = mild difficulty, 4 = moderate difficulty, 5 = severe difficulty, 6 = profound difficulty); (c) ordinal levels characterized in functional terms and not in technical terms to facilitate the classification by caregivers, including parents and professionals;

Table 1. ABILITIES Index dimensions (In Simeonsson & Bailey, 1991)

Dimension	Definition
Audition (Hearing)	Child's ability to hear in everyday activities. Score hearing for each ear separately. Score of 5 (Profound loss) means that the child has no hearing. Rate the child's hearing without a hearing aid. If the child uses a hearing aid, indicate this on the back of the form
Behavior Social Skills	Two ratings are made in this area, one for social skills and one for inappropriate or unusual behavior. Social skills refer to the child's ability to relate to others in a meaningful manner. Inappropriate and unusual behavior may include fighting, hitting, screaming, rocking, hand flapping, biting self, etc...
Intellectual Function (Thinking & Reasoning)	This rating reflects the child's abilities to think and reason. Think about the way the child solves problems and plays with toys and compare this to other children of the same age.
Limbs (Use of Hands, Arms & Legs)	Think about the child's ability to use his or her hands, arms, and legs in daily activities. Score left and right limbs separately. A score of 5 (Profound difficulty) means that the child has no use of a-limb.
Intentional Communication (Understanding & Communicating with others)	Two ratings are made, one for the child's ability to understand others and one for the child's ability to communicate with others. This rating includes attempts to communicate in ways other than talking (signs, gestures, picture boards). Think about the child's ability to understand and communicate with others and compare this to other children of the same age.
Tonicity (Muscle Tone)	Think about the child's muscle tone. Normal means that the child's muscles are neither tight nor loose. If the child's muscle tone is not in the normal range, place an "X" in each box that indicates the degree of tightness or looseness or both. Two ratings should be made since, in some children, tightness or looseness can vary in different parts of the body or from one time to the next.
Integrity of Physical Health (Overall Health)	Think about the child's general health. Normal means the usual health problems & illnesses typical for a child this age. If there is a health problem, ratings should be made indicating the degree to which health problems limit activities. Ongoing health problems may include seizures, diabetes, muscular dystrophy, cancer, etc.
Eyes (Vision)	Think about the child's ability to see in everyday activities. Score both the left & right eye. A score of 5 (Profound loss) means that the child has no vision. Rate the child's vision without glasses. If the child uses glasses, indicate this on the back of the form.
Structural Status (Shape, Body Form & Structure)	This rating reflects the form and structure of the child's body. Normal means that there are no differences associated with form, shape, or structure of the body parts. Differences in form include conditions like cleft palate or club foot; differences in structure include conditions like curved spine and arm or leg deformity. Ratings should indicate how much these differences interfere with how the child moves, plays, or looks.

(d) classification able to be made on the basis of observation, prior knowledge of the child, or other specific information; (e) classifications reflecting more relative than absolute standards for ability or disability levels; (f) classifications to establish a holistic profile of intra-individual differences; (g) a profile emphasizing the abilities and disabilities relevant to individualized intervention; and (h) a profile rather than simply a label, thereby minimizing simplistic categorization of children (Simeonsson, Bailey, Smith, & Buysse, 1995).

For research purposes (and not as a way to generate a composite score for clinical use) one can calculate an overall severity score by multiplying the assigned rating in each of the nine dimensions by the following experimental weights proposed by Simeonsson (R. J. Simeonsson, personal communication, September 9, 2006): Audition = 1.8; Social Skills = 1.4; Inadequate Behavior = 1.7; Intellectual Function= 2.0; Limbs, Hands= 1.5; Limbs, Arms = 1.4; Limbs, Legs = 1.6; Understanding = 1.2; Communicating with others = 1.0; Tonicity, Tightness = 1.5; Tonicity, Looseness = 1.4; Overall Health = 1.5; Vision = 1.7; Structural Status = 1.3. In this study, Cronbach's alpha coefficient for all 19 items was .87.

To evaluate the quality of IEP goals written by the special education teachers, two instruments were used: the Goal Functionality Scale III (GFS III; McWilliam, 2009) and the IEP/Individualized Family Service Plan (IFSP) Goals and Objectives Rating Instrument (GORI; Notari, 1988). A total of 3,158 goals from 83 IEPs were coded individually, first with GFS III and second with GORI. Within every IEP, all goals were first coded using item number 1, and then all goals were coded using item number 2, and so forth. The use of two instruments was to determine convergent validity of the scores and to capture quality features that each instrument idiosyncratically included.

Goal Functionality Scale III. The GFS III was designed to evaluate the quality of IFSP/IEP goals/outcomes. It consisted of seven items: (a) indication of participation in routines (engagement), (b) specificity of the desired behavior, (c) necessity of the skill, (d) quantification of the acquisition criterion, (e) relevance of the acquisition criterion, (f) relevance of the generalization criterion, and (g) relevance of the timeframe criterion. Each goal/outcome was rated independently on a scale of 1-4: *not at all*, *somewhat*, *much*, or *very much*. The overall quality of a specific goal/outcome was the sum of the scores across the items, so the higher the score for a goal/outcome the higher the quality.

GFS III ratings of IEP goals were made by two researchers who were trained to a criterion of 98% of exact agreement and an intraclass correlation coefficient (ICC) of .58. One of the researchers rated all of the IEPs and the other one 20% of them. The obtained agreement was 99.24% for the item "participation in routines," with a weighted kappa (K_w) of .62 and an ICC of .75; 95.72% for the item "measurability," with a K_w of .59, and an ICC of .61; and 92.18% for the item "necessity or usefulness," with a K_w of .54, and an ICC of .56.

Items 5, 6, and 7 on the GFS III are about the quality of criteria for accomplishing the goal. Although these items were rated, no variance was found (i.e., all goals were rated with a score of 1, so they were excluded from further analyses. Item 4, also related to criteria, was also

excluded because, although exact agreement was 99.62%, K_w and ICC were not acceptable (.13 and .45, respectively). Therefore, only three GFS III items remained for analysis.

IEP/IFSP Goals and Objectives Rating Instrument. The GORI was designed to evaluate IFSP/IEP goals and objectives in five dimensions: (a) functionality, (b) generality, (c) instructional context, (d) measurability, and (e) hierarchical relationships among objectives (i.e., how closely the objective is related to the goal). Each goal was rated independently to determine the presence or absence of 10 different quality indicators. A score of 0 or 1 was assigned to the absence or presence (respectively) of the indicator. To examine the hierarchical relationship between an objective and its corresponding goal, an additional indicator was used with scores of 0, 1, or 2, if the objective was completely unrelated to the goal, if it simply restated the goal, or if it was a necessary step toward attainment of the goal, respectively. For further description of indicators included in each quality dimension see Table 2. The overall quality of a specific goal was the sum of the scores across the quality indicators, so the higher score for a goal the higher the quality (Pretti-Frontczak & Bricker, 2000). In this study, because Cronbach's alpha coefficient for all 11 indicators was .92, a single composite measure – the GORI overall mean score – computed as the mean of scores across all goals, was used. For each goal, we computed the sum of scores and, for each IEP, we computed the mean of scores across all goals. The possible range for this composite score was 0-12.

GORI was rated by only one researcher, who conducted intrarater agreement checks in 15% of all IEPs, one week later. In this study, mean exact intrarater agreement was 97% and mean kappa was .79. Previously, Pretti-Frontczak and Bricker (2000) reported an interrater percent agreement of over 80% and a mean kappa of .72.

Data Analysis

Descriptive data on ABILITIES, GFS III, and GORI were examined to determine the level of functioning of participating children, the number of goals in each IEP, and the quality of IEP goals. Analysis of variance (Kruskal Wallis Test) and post hoc assessment of independent samples (Mann-Whitney) were run to determine whether the quality of IEP goals varied by developmental domain. Nonparametric statistics were chosen due to violations of the normality assumption on scores of the quality of IEP goals. The first author assigned each goal to one of five domains -motor, autonomy (i.e., self-help), language, social, and cognition. Finally, to determine the convergent validity of the scores of GFS III and GORI and the associations between IEP quality indicators and children's degree of disability, Spearman's rho correlation coefficients were computed.

RESULTS

Fifteen percent of participating children were rated by special education teachers as having a profound disability in at least one domain on the Abilities Index. Using the same criterion of one domain, 46% were rated as having a severe disability, 27% were rated as having a moderate disability, 10% were rated as having a mild disability, and 2% were rated as having a suspected disability.

The number of goals per IEP varied widely, ranging from 4 to 95 (M = 38.18, SD = 20.75). The frequency of each GORI indicator (per IEP) ranged from 0% to 46.72%, with hierarchical relations among objectives and inclusion of performance criteria virtually nonexistent and generality related to likelihood of adaptation to a variety of disabilities characterizing almost half the goals (see Table 2).

Table2. Percentage of goals per IEP rated positively on each GORI quality indicator

Dimension	Indicator	% M	SD
Functionality	1. Skill needed to participate in most or all daily activities	25.52	15.35
	2. Skill needed to complete most or all daily activities	8.30	7.79
Generality	3. Skill represents a general concept or class of responses	10.57	8.98
	4. Skill can be adapted to a variety of disabilities	46.72	25.70
	5. Skill can be generalized across a variety of settings, materials, and/or people	27.88	16.77
Context	6. Skill can be taught across daily activities	30.50	17.64
	7. Skill can be taught by various team members during everyday situations	24.33	15.02
Measurability	8. Skill can be seen or heard	33.57	20.58
	9. Skill can be counted or measured	10.58	10.49
	10. Inclusion of performance criterion	2.00	3.52
Hierarchical relations	11.1.The objective restated the goal	0.12	0.61
	11.2.The objective was a necessary step toward attainment of the goal	0.00	0.00

Table 3 presents the mean scores obtained on GFS III items and on the GORI composite measure. It also includes descriptive statistics of IEP goal quality indicators by five developmental domains. Computation of a Kruskal-Wallis test with developmental domains as independent variables and GFS III indicators and GORI mean quality as dependent measures indicated that all four measures of IEP goal quality varied as a function of developmental domain: for participation in routines, $H(4) = 1037.28$, $p < .001$; for measurability, $H(4) = 178.33$, $p < .001$; for necessity or usefulness, $H(4) = 546.36$, $p < .001$; and for the GORI mean quality score, $H(4) = 191.51$, $p < .001$.

Table 3. Mean quality of goals by developmental domain

	Number of goals	M	SD	Min	Max
GFS III					
Participation in routines	3158	1.10	0.10	1.00	1.39
Motor development	821	1.00	0.09	1.00	3.00
Autonomy	454	1.53	0.59	1.00	4.00
Language	303	1.01	0.11	1.00	2.00
Social development	433	1.16	0.47	1.00	4.00
Cognition	1147	1.01	0.09	1.00	2.00
Measurability	3158	1.48	0.25	1.00	2.05
Motor development	821	1.68	0.59	1.00	3.00
Autonomy	454	1.68	0.59	1.00	3.00
Language	303	1.47	0.59	1.00	3.00
Social development	433	1.28	0.48	1.00	3.00
Cognition	1147	1.49	0.59	1.00	3.00
Necessity or usefulness	3158	1.58	0.27	1.00	2.00
Motor development	821	1.27	0.56	1.00	4.00
Autonomy	454	2.38	0.93	1.00	4.00
Language	303	1.50	0.59	1.00	4.00
Social development	433	1.73	0.81	1.00	4.00
Cognition	1147	1.55	0.64	1.00	4.00
GORI – Mean Quality	3158	2.20	1.22	0.00	4.16
Motor development	821	1.89	2.15	0.00	9.00
Autonomy	454	4.26	3.16	0.00	9.00
Language	303	2.46	2.90	0.00	9.00
Social development	433	1.83	2.64	0.00	8.00
Cognition	1147	2.38	2.59	0.00	9.00

Post hoc comparisons and Cohen's *d* on IEP goals quality indicators by developmental domains are shown in Table 4. Examination of effect sizes shows some large differences, such as between motor development and autonomy on participation and necessity; between motor and social development on measurability; between autonomy and language on participation and necessity; between autonomy and social development on measurability; and between autonomy and cognitive development on participation and necessity. No differences were found between language and cognition, and only small differences were found between motor development and language. Post hoc comparisons, using Mann-Whitney tests, indicated all but nine differences between mean scores of IEP goal quality, by developmental domain, were statistically significant.

Finally, Table 5 lists the Spearman correlation coefficients among the quality of IEP goals and children's degree of disability. GFS III items and the GORI overall score were generally correlated. We found a statistically significant but non-noteworthy association between the GORI overall score and participation in routines and strong associations between the GORI and measurability and necessity or usefulness. We also found statistically significant associations among the three indicators of the GFS III: a non-noteworthy association between participation in routines and measurability, a small association between participation in routines and necessity and usefulness, and a moderate association between measurability and necessity or usefulness. The severity of disability presented a statistically significant but non-noteworthy association with measurability and GORI. The main conclusion from these data is that variables of IEP quality are associated and yet measure different specific characteristics.

Table 4. Post hoc comparisons, using Mann-Whitney tests, on IEP goals quality indicators by developmental domains

	Participation in routines		Measurability		Necessity or usefulness		GORI mean quality	
	U	d	U	d	U	d	U	d
Motor development vs. Autonomy	96411.50*	-1.56	186019.00	0.00	65652.00*	-1.49	117148.50*	-0.88
Motor development vs. Language	123196.00	-0.10	101089.50*	0.36	96211.50*	-0.40	123711.00	-0.22
Motor development vs. Social development	155011.50*	-0.57	114170.50*	0.93	120886.50*	-0.67	153508.50*	0.02
Motor development vs. Cognition	468874.00	-0.11	390467.50*	0.32	350443.00*	-0.47	439661.50	-0.21
Autonomy vs. Language	36173.50*	1.49	56022.50*	0.36	32719.50*	1.16	45902.50*	0.59
Autonomy vs. Social development	63817.50*	0.70	63302.00*	0.93	61571.50*	0.75	56311.00*	0.83
Autonomy vs. Cognition	135592.00*	1.53	216384.00*	0.32	132516.50*	1.06	173981.50*	0.65
Language vs. Social	57814.00*	-0.52	54595.50*	0.54	56788.00*	-0.33	57625.50*	0.23
Language vs. Cognition	172840.00	0.00	170958.50	-0.03	167377.00	-0.08	169889.50	0.03
Social vs. Cognition	217548.50*	0.54	202677.50*	-0.58	223458.50*	0.25	210720.00*	-0.21

*$p < .005$ (after a Bonferroni correction).

Table 5. Spearman's rho correlation among IEP goal quality variables

	1.	2.	3.	4.
1. Participation in routines (N=83)	-			
2. Measurability (N=83)	.26*	-		
3. Necessity or usefulness (N=83)	.39**	.52**	-	
4. GORI – Mean quality (N=83)	.25*	.76**	.63**	-
5. Severity of disability (N=57)	.21	.26*	.11	.23*

*$p < .05$. **$p < .01$.

DISCUSSION

By focusing on the quality of IEP goals for children with disabilities attending inclusive preschool classrooms in the District of Lisbon (an area where about one fifth of the Portuguese people live), the current study adds previously unavailable information on Portuguese early childhood special education services. According to our findings, IEPs written under the 1991 special education law included low-quality goals that might not result in individualized and effective interventions for children. These findings have implications also for other countries, because the variables measured are not necessarily ethnocentric to Portugal.

As in prior research (Lynch & Beare, 1990), the most frequently observed indicators of the quality of goals were related to generalization. In our study, half the goals addressed skills that could be functional for children across a variety of ability levels, including children without disabilities, and around one fourth were related to skills that could be generalized across a variety of settings, materials, or people. This relatively higher frequency of generalizable goals may be related to fundamentally vague and general outcomes, which Lynch and Beare found and Yell and Stecker (2003) described. For example, a goal stating a child will walk is generalizable but nonspecific (the extent, conditions, level of assistance, and so on, are unspecified). Therefore, although generalizability of goals is generally desired, that is not true at the expense of specificity.

We also found a high number of goals per IEP, which often can lead to teachers' failing to monitor practices because they have too many requirements (Fuchs & Shinn, 1989). According to Shinn and Shinn (2000), numerous goals are written for each deficit area because educators are unclear about what behaviors are important to measure, so they focus on satisfying a procedural requirement rather than improving student achievement. The rather low scores on the measurability of outcomes are consistent with Shinn and Shinn‘s argument, with only one third of goals addressing skills that can be seen or heard, a tenth of goals addressing skills that can be counted or measured, and no more than one fiftieth of goals having performance criteria. The low mean on the GFS III measurability item and the exclusion of items based on no variance (all goals rated 1) provide further support for the notion that the high number of goals and the generalization findings may be associated with vague and general outcome statements. This absence of criteria for successful performance is consistent with prior findings (Fuchs & Shinn, 1989; Lynch & Beare, 1990; Yell & Drasgow, 2000). Results also suggest Portuguese preschoolers' IEP goals do not appropriately focus on skills needed for participation in naturally occurring daily routines.

Low functionality and measurability as well as insufficient focus on natural routines and environments are consistent with previous investigations of IEP goals (Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Pretti-Frontczak & Bricker, 2000; Yell & Stecker, 2003), although results reported here indicate greater cause for concern. Findings also suggest the measurability of goals is positively associated with the child's severity of disability. Because children with more severe disabilities might make progress in smaller steps than higher functioning children, it might be necessary for special education teachers to pay more attention to the measurability criterion. Therefore, this association may be due to special education teachers' increased efforts to write operationalized IEP goals for children with greater needs or to a predominance of autonomy goals for children with more severe disabilities. The quality of IEP goals varied as a function of developmental domain, with goals that address autonomy skills consistently rated higher on participation in routines, measurability, necessity or usefulness, and overall mean quality (GORI). These results suggest teachers may have less difficulty in understanding the necessity and functionality of independence (i.e., self-help) skills and in translating them into appropriate outcomes. These results were expected as autonomy skills, that is, behaviors that are needed for important daily routines such as dressing, bathing, eating, and so on, almost naturally translate into necessary, useful, and functional outcomes.

Limitations of this study include nesting of IEPs within teachers, which may have contributed to decreased data variability and representativeness. Also, such nesting was not considered in data analysis as we considered the existence of data independence at the child level. Furthermore, data presented here are based exclusively on researchers' ratings of IEP goals. Inclusion of parents' and other natural caregivers' ratings of IEP goals would have provided relevant information on the social validity of such goals. The rating scales used here to assess the quality of IEP goals focus on the characteristics of goals as final products and do not capture directly the features of their process of elaboration (such as participation of parents in writing the goals). Finally, cultural issues should also be considered as measures used in this study were developed in the United States of America. Although quality indicators included in GFS III and GORI are consistent with the current early childhood special education theoretical framework in Europe as well as the U.S., there is no available information on their cultural appropriateness (i.e., we do not know the extent to which Portuguese teachers or families value such indicators). Despite these limitations, the data are robust enough to provide important information for the field, to add to the body of literature on IEP quality, and to contribute to an understanding of functionality in early intervention.

The IEP goals characteristics described in this study may hinder the individualization of interventions provided to young children and the acquisition of meaningful

skills by them. Such findings suggest that clear guidelines on the development of IEP goals and that teacher training on how to write meaningful, measurable, and functional goals are warranted.

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CHAPTER III

A Training Program to Improve IFSP/IEP Goals and Objectives through the Routines-Based Interview[ii]

[ii] Boavida, T., Aguiar, C., & McWilliam, R. A. (2013). A Training Program on the Quality of IEP/IFSP Goals and Objectives through RBI. *Topics of Early Childhood Special Education*, XX(X):1-12. Doi: 10.1177/0271121413494416

ABSTRACT

The authors describe a training program designed to improve the knowledge and skills of early childhood interventionists. Within the context of using the Routines-Based Early Intervention approach, this training focused on improving the quality of goals and objectives on individualized plans, through the Routines-Based Interview. We structured the training around five face-to-face sessions and a follow up 3 months later. Here, we describe the development of the program, its content and methods, and the results on improvement of the goals and objectives with 80 professionals. These participants had completed the training, provided pre-training data, and provided post-training data. Results showed that the training described here had the desired very large effect: Quality ratings of goals and objectives increased by over three standard deviations.

Practices often do not match philosophies about family centeredness and functionality in early childhood intervention (ECI; Campbell & Halbert, 2002). Certain professional activities can, however, bring those philosophies to life. We propose a training program as a promising solution for bridging the gap between philosophy and practice.

ECI has come to be defined as a family-centered endeavor, which means practitioners are expected to interact with families in a friendly and supportive manner, are expected to give families opportunities to make meaningful decisions about how ECI helps them, and are expected to address family-level needs (McWilliam, 2010a). Consistent with this approach has been an understanding that children learn in the contexts that their families and other caregivers, such as teachers, provide (Dunst, Bruder, Trivette, & Hamby, 2006). Along with this routines-based approach to conceptualizing ECI (McWilliam, 2010b), theorists have pointed out that functional child skills are those that help the child participate in everyday activities, those that promote a normalization of child and family life, and those that capitalize on the many learning opportunities afforded by home and group-care routines (Dunst, Hamby, Trivette, Raab, & Bruder, 2000). The training program described here was aimed at promoting these concepts of family centeredness and functionality among early childhood interventionists in the Lisbon area. The Portuguese context is briefly described below, but the utility of this training is probably universal. For example, even though much of the supporting research was conducted in the U.S., European notions and policies about the importance of function and participation are quite sophisticated.

IEP and IFSP in Portugal

In Portugal, young children with disabilities may receive either early childhood special education (ECSE) or ECI services, depending on their age, type of child care arrangement, and region of the country they live in (as different regions are distributing resources differently). Therefore, services and supports these children receive can be guided by an Individualized Education Program (IEP, under the Decree-Law No. 3/2008), by an Individualized Family Service Plan (IFSP, known as an Early Intervention Individualized Plan under the Portuguese Decree-Law No. 281/2009), or by both. If a child has both plans, "the IFSP should dovetail with IEP" (Decree-Law No. 281/2009, p. 7300). Although different, both documents require active participation of the family and the use of the International Classification of Functioning, Disability, and Health (ICF; World Health Organization, 2001) as the method for documenting children's functioning and the environmental facilitators and barriers to social and educational participation. These requirements, although consistent with the Key Principles of ECI (Workgroup on Principles and Practices in Natural Environments, 2007), and addressing major

challenges such as individualization and parent involvement (Drasgow, Yell, & Robinson, 2001; Jung & McWilliam, 2005), do not seem to be reflected in IFSPs or IEPs (Simeonsson & Ferreira, 2010).

Research on Actual Practices in ECI

In a literature meta-analysis on family-centered practices, Dunst, Trivette, and Hamby (2007) concluded that the effect of professional practices on intervention outcomes is mediated by self-efficacy beliefs, so practices should incorporate opportunities for families to make choices and respect for families' decision making. However, available studies on family involvement and participation in ECSE and ECI in Portugal (e.g., Almeida, 2009; Figueiredo, Aguiar, & Pimentel, 2013; Pereira, 2009; Pimentel, 2005), suggest limitations exist in the implementation of family-centered practices: Parents are still not equal partners in decision-making regarding assessment, planning, and implementation of interventions. This attenuated involvement of families might then have an impact on the goals and objectives on IFSPs/IEPs.

Research on IFSP/IEP goals and objectives in Portugal has shown an excess of goals and objectives per IEP/IFSP. Boavida, Aguiar, McWilliam, and Pimentel (2010) found a mean of 38.18 goals per IEP, ranging from 4 to 95. Furthermore, Portuguese plans have lacked specificity in the writing of goals and objectives (i.e., did not address observable or measurable behaviors) and inadequately contextualized skills within natural routines and settings (Boavida et al., 2010; Campelo & Nunes, 2008; Valentim, 2006). These results are consistent with previous research on American IEP and IFSP goals (Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Jung & McWilliam, 2005; Pretti-Frontczak & Bricker, 2000; Yell & Stecker, 2003) and support the need for strategies to bridge the gap between recommended and actual practice. Thus, interventions aiming to support ECI and ECSE professionals in the development of family-centered, meaningful, measurable, and functional goals are of critical importance (Boavida et al., 2010). Because the low quality of Portuguese IEP goals and objectives might be associated with a lack of full understanding of family-centered practices, training should focus on practices consistent with a family-centered conceptual framework for developing the IFSP or IEP (Jung & McWilliam, 2005).

One family-centered framework is the five-component model for ECI in natural environments, also called Routines-Based Early Intervention (RBEI, McWilliam, 2010b), which includes the Routines-Based Interview (RBI, McWilliam, 2005, 2010b). A preliminary study (McWilliam, Casey, & Sims, 2009) showed that, compared to the traditional approach of developing the IEP, the RBI generated more functional goals.

A Training Program to Improve the Quality of Goals and Objectives

The purpose of this training was to improve the knowledge and skills of early childhood interventionists, with a particular focus on improving the quality of the goals and objectives (including reducing the number) on the plans. We considered high-quality goals to meet certain criteria: (a) be appropriate for the context, supporting natural caregivers' and families' routines and reflecting real-live situations; (b) reflect family priorities; (c) address meaningful skills necessary or useful for the child's participation in family, classroom, and community routines; (d) be free of jargon; (e) be specific and measurable, with meaningful criteria for generalization and timeliness (Bailey et al., 1998; Jung & McWilliam, 2005; McWilliam, 2010a; McWilliam et al., 1998). Specifically, participants were trained to use the RBI (described later), which is designed to help families identify their own priorities for child and family goals. The contextual basis of this needs assessment encourages families to think about the details of their everyday lives, thus promoting their ability to specify what they want to change. The need for this training in Portugal was evident from aforementioned existing data about the low quality of Portuguese IEP/IFSP goals and objectives (Boavida et al., 2010; Campelo & Nunes, 2008; Valentim, 2006). In the following sections, the rationale for in-service training is presented, along with a description of how the program was developed and a description of the final version of the program.

In-service training. Supporting ECI and ECSE professionals in the development of high-quality goals and objectives through in-service training requires effective methods and strategies for adult learning. Bransford et al. (2000) highlighted three key principles related to successful adult learning:

1. Students' initial preconceptions and understanding must be taken into consideration when presenting new concepts and information.
2. Students, in order to develop competence, ought to have solid factual knowledge, understand it in the context of a conceptual framework, and organize it so it can be easily retrieved and used.
3. Learners must take control of the learning process by defining their learning goals and monitoring their own progress.

Building on the work of Bransford and colleagues (2000), Trivette, Dunst, Hamby, and O'Herin (2009) conducted a research synthesis on the characteristics of adult-learning methods and strategies and their consequences on learners' knowledge, skills, attitudes, and self-efficacy beliefs. Results showed that learning methods and practices more actively involving learners in

the acquisition, use, and evaluation of the new knowledge and practice had the most positive goals and objectives. According to the authors, training opportunities should include multiple learning experiences, high rates of learners' self-assessment of their experiences, instructor-facilitated learner assessment, and a small number of learners (< 30) and should last more than 10 hours across multiple occasions. These recommendations were the starting point for the training described in the present paper. As specified later in this article, the training consisted of 22 classroom hours, across five sessions (four sessions of 4.5 hours and one of 4 hours), and an optional final session. The trainer worked with multidisciplinary teams of 10-20 participants.

Development of the training program. To develop the program, we pilot tested a preliminary version. We hypothesized that this training would result in teachers' developing fewer and more functional IFSP/IEP goals and objectives.

The pilot study is described briefly. Details about the content of training are provided in the Final Version of Training: Training Content and Method Delivered section below, and the evaluation of that final training program is presented after that.

Participants. Eighteen teachers, together with other ECI professionals, participated in four training groups (see the Final Version of Training: Training Content and Method section for more detail) in four different regions of Portugal. Before the passage of the new Decree-Law No. 3/2008 and Decree-Law No. 281/2009, ECSE or ECI teachers were the main professionals responsible for developing EIP. Therefore, we asked each teacher to supply one EIP or IFSP developed before the training and one developed after the training.

The mean age of the teachers was 42 years (*SD* = 5.15), and they had 17.12 years of education (*SD* = 1.41), 17.47 years of experience as educators (*SD* = 5.41), 2 years of experience in special education (*SD* = 5.59), and 4.12 years of experience in early childhood intervention (*SD* = 2.09).

Method. Because few changes needed to be made to the training program, the description of the training is provided in the Final Version of Training: Training Content and Method section below. In brief, it consisted of four sessions of 4-4.5 hours on (a) key concepts, (b) ecomap and RBI (two sessions), (c) functional-goal writing, and (d) other RBEI components (i.e., primary service provider, support-based home visits, collaborative consultation to child care). The evaluation of the pilot training was based on the number and quality of IEP goals, as measured by the Goal Functionality Scale III (GFS III; McWilliam, 2009). Designed to evaluate the quality of IEP/IFSP goals/objectives, it consisted of seven items: (a) indication of participation in routines (engagement), (b) specificity of the desired behavior, (c) necessity of the skill, (d) quantification of the acquisition criterion, (e) relevance of the acquisition criterion, (f) relevance

of the generalization criterion, and (g) relevance of the timeframe criterion. Each goal/objective was rated independently on a scale of 1-4: *not at all*, *somewhat*, *much*, or *very much*. In this pilot study, because Cronbach's alpha coefficient for all 7 items was .92 (N = 18), a single composite measure – the GFS III overall mean score – computed as the mean of scores across all goals, was used. For each goal, we computed the sum of scores (i.e., highest score possible = 28) and, for each IEP/IFSP, the mean of scores across all goals, so the higher the score for a goal/objective the higher the quality and functionality.

GFS III ratings of IEP/IFSP goals were made by two researchers, one of whom rated all the IEPs/IFSPs, and the other rated 20% of the IEPs/IFSPs. Interrater agreement was 83.38%, with a weighted kappa of .62, and an intraclass correlation of .72.

Findings. This pilot study showed that, after the training, the EIP/ IFSP developed contained fewer and more functional goals and objectives. As a result of participants' conducting the RBI and then writing goals, they developed an average of 9.28 goals per IEP (SD = 4.32), compared to the pretraining average of 38.33 goals per IEP (SD = 24.31). The effect size was very large (d = 2.03). The goals and objectives written after the training were more functional, with a mean goal functionality score of 14.08 (SD = 3.68) out of a possible score of 28, than those written before the training (M = 7.79, SD = .63). Again, the effect size was very large (d = 2.92).

Changes resulting from pilot study. The pilot study informed us that the training had potential that would be enhanced with some minor changes. First, assessment of children in ECI in Portugal must now include the development of a functionality profile with reference to the International Classification of Functioning, Disability, and Health - Children and Youth (ICF-CY, WHO, 2007) (see Functionality profile - International Classification of Functioning, Disability and Health section for more detail), but trainees did not obtain enough detailed information from the RBI to complete valid functionality profiles. The question of validity arose from the high variability in ICF-CY codes. In the pilot study training, the Measure of Engagement, Independence, and Social Relationships (MEISR, McWilliam & Hornstein, 2007) (see MEISR section for more detail) was not overtly linked to the ICF-CY, so one change to be made was explicit linking of these two tools (Boavida, Ornelas, Aguiar, & McWilliam, 2013). Second, it appeared that trainees did not understand the purpose of the functional goals they were taught to develop. Explaining how the goals were central to effective service delivery through implementation of the RBEI model was important to include in the training. Third, although functional goals were the outcome aimed for, this outcome was expected to vary according to the fidelity with which the RBI was carried out. Furthermore, the RBI was the specific process used to determine what the functional goals were, which is more important than how they are written.

Requiring participants to submit a video recording of their conducting an RBI was therefore added to the training program. This video was to be scored with the RBI Implementation Checklist (McWilliam, 2010b) and feedback was to be provided to the trainee. Once these three additions to the training program were planned, the actual training was ready to occur.

Final Version of Training: Training Content and Method Delivered

The training program was built around five face-to-face sessions and a sixth contact by e-mail. Table 1 shows the duration, main content, and main method for each of the sessions. This section describes the content of the training and the training methods used for each session.

Table 1. Training organization

Session # and Duration		*Main Content*	*Main Method*
1	4.5 h	Initial data collection + key concepts	Case story
2	4.5 h	Ecomap + RBI	Video demonstration + discussion
3	4.5 h	Ecomap + RBI	Role-play
4	4.5 h	MEISR + ICF-CY Profile + Functional Goals	Group work
5	4 h	Functional Goals + other RBEI Components	Presentation and discussion
Field work (3 months)		Ecomap + RBI + Functional Goals	Follow up questions (E-learning platform)
6	Feedback	RBI + Functional Goals	Written feedback

Abbreviations: RBI, Routines-Based Interview; MEISR, Measure of Engagement, Independence, and Social Relationships; ICF-CY, International Classification of Functioning, Disability, and Health−Children and Youth.

Session 1: ECI concept and philosophy. The training began with an explanation of the purpose of the training, introductions, and an overview of the content.

The training on *IEP and IFSP - Development of quality goals and objectives* started with a brief presentation of the recent Portuguese research indicating the need that led to the design of this training. To help in the contextualization, the trainer's background and motivations were also briefly presented and discussed.

The next step was to explore the group characteristics and functioning (e.g., if they already work together) by inviting the trainees to introduce themselves. They were asked to talk about their background, the needs they experience in their daily practice, the motivation that brought them to the training, and their expectations.

Once the trainer had a perspective of the group's background, motivation, and expectations, a more directed introduction to the content, goals, and methods was possible. To

promote full participation and ensure that participants got the most out of the training, it was essential that they were aware of the content and goals of the training as well as of the expectations for them. At the beginning of each session, specific goals and content were outlined.

Concept and philosophy of ECI. It was deemed important to arrive at a common understanding of the concept and philosophy of ECI. Participants were mainly ECI professionals, Special Education teachers and regular classroom teachers and they had different levels of knowledge and experience in the field, such as in their initial academic training, the number of years of experience in ECI, and the programs in which they had worked. The first day, therefore, was devoted to the search for this common understanding through activities promoting (a) the exchange of knowledge and perceptions and (b) teamwork. Brainstorming and the case method of instruction were the two primary activities.

Brainstorming concept of ECI. Brainstorming is a well-known and often-used group procedure in the generation of creative ideas (Osborn, 1961). As a powerful group procedure, when properly applied, the potential of brainstorming goes beyond the fluency and quality of ideas generated (Isaksen & Gaulin, 2005): It improves teamwork because it is a sharing activity that encourages participation in a safe climate with divergent thinking.

After an explanation of the brainstorming rules, a slide with the words "early intervention" was displayed and the participants were invited to give short definitions of the term as well as key concepts that go along with it. They were also invited to write all the ideas that crossed their minds if they did not have the chance to say them at that moment, so they did not forget them, and could share them as soon as possible.

During the brainstorming, the trainer acted as a facilitator, writing down, rapidly, all the ideas on a flipchart or board. The trainer's role was crucial to the success of the session (Isaksen & Gaulin, 2005), and as important as recording the ideas was guiding the group's interaction, by reinforcing the guidelines and encouraging all members to participate.

Once all participants' contributions were recorded and no one had anything to add (about 10 min.), the information on the flipchart was discussed and combined in light of the legal framework and recommended practices. For this discussion, besides the information in the flipchart, slides with excerpts from the Portuguese law and from Dunst (2007) and Bruder (2010) were used.

This was an adaptation of the traditional use of brainstorming, because it was not focused on creative-idea generation, the session was shorter than the 30-45 minutes recommended by Osborn (1963, cited by Isaksen & Gaulin, 2005), and the follow-through was conducted right after the brainstorming. However, we think that this adaptation was the best way to achieve our

aims. Being the first activity of the training after the presentation, it could provide the model of the participation style expected from the group. Our aim was to take advantage of contributions from all of the members because of what their different backgrounds could offer, in a judgment-free environment. This exercise was designed to help participants understand that their contributions were important to the training.

After the brainstorming, through the discussion of the different contributions, framing them within the latest legislation and research, we expected to reach a common vision of ECI. Nevertheless, a deep understanding of the concepts was not considered possible without understanding the philosophy supporting them.

Case method of instruction: Philosophy of ECI. The case method of instruction (CMI) was the principal method used for teaching about the ECI philosophy underlying RBEI model (e.g., functionality, family centeredness, teaming). CMI is an instructional procedure for teaching general skills of decision-making, using real life situations, and requiring the active participation of trainees in the learning process (McWilliam, P.J., 1996). It was initially developed for ECI by P. J. McWilliam (1992) and since then it has been used with promising results in the instruction of family-centered service provision and teaming (Snyder & McWilliam, 1999).

The CMI in ECI personnel preparation has distinctive characteristics (Snyder & McWilliam, 2003). The cases are written stories that describe realistic everyday issues encountered by ECI professionals in their work. These stories, though realistic, are not extreme and are open-ended and dilemma-based. They are unsolved, so trainees can discuss, with the trainer, potential solutions to the dilemma. The focus is on decision making, not on a right answer.

The decision to use a case story in this training was made after the pilot training revealed the need to deepen the ECI philosophy in a way that trainees could actively build on their knowledge and experiences. A story was written so that topics such as family centeredness, natural environments, inclusion, transdisciplinary services delivery, and legal issues would be addressed, bridging the gap between theory and practice. Moreover, the details of the Portuguese everyday context and dilemmas found by ECI professionals were considered.

A list of case discussion questions was designed to guide the debate. The first two sets of questions were related to legal requirements, knowledge of the law regarding ECI and the EIP and IFSP, and the ICF-CY. The next two sets of questions were related to the identification and analysis of particulars of the case. The last two sets of questions were related to what actions might be taken and their consequences.

After the follow-through of the brainstorming, a brief overview of CMI was presented, along with the purpose of its use in this particular training and of what was expected from the

trainees during the case discussion. A copy of the case story and discussion questions was distributed to each trainee. Ten minutes after a first read-through, participants were grouped in small groups of four or five.

Groups were designed to be as heterogeneous as possible, regarding professionals' basic training and experience, so they could support each other and provide different contributions to the case preparation. They had 45 minutes to prepare the case discussion. During this time, the trainer was in the room and joined the groups, whenever requested, to answer any questions.

Once all the groups finished the preparation, the whole-group discussion took place. The discussion followed the questions provided by the trainer. Each group gave an initial answer and then anyone could intervene with new ideas, combination of ideas, or any contribution. For the first four sets of questions, slides with information and theory about the specific themes were introduced.

Once again, the trainer acted as a facilitator, writing down all the ideas on a flipchart or board. The trainer was also responsible for an atmosphere of suspended judgment, promoting the use of critical thinking skills and keeping the discussion going.

The main purpose of using CMI in this training was the consolidation of the ECI philosophy. Through the challenges of recommended practices and barriers to their implementation found in day-to-day work with families and their children, trainees were invited to find solutions to solve the presented dilemma based on their knowledge and experience.

Because trainees did not possess the same knowledge regarding ECI, one initial aim was that through small groups' discussion, the main issues were addressed and everyone had the opportunity to contribute with their knowledge and see their questions addressed.

The process above described also allowed for a successful collaborative problem-solving experience. As Snyder and McWilliam (2003) clarify, trainees "apply knowledge, hear alternative view points, reflect on their beliefs and values, and use a decision-making process to solve dilemmas" (p. 286). This experience can increase consciousness of the benefits of working in a transdisciplinary team in the pursuit and achievement of better solutions.

RBEI. After the discussion of the ECI concept and philosophy, through brainstorming and the CMI, the RBEI model was presented as a useful bridge between philosophy and practice.

The RBEI model is based on five components. Each component is comprised of a principle of service provision accompanied by a major practice: (1) understanding the family ecology through the development of an ecomap; (2) assessing needs and developing a functional, family-centered intervention plan by conducting a Routines-Based Interview (RBI) and following

the seven steps of functional goal writing; (3) organizing integrated services through the use of a primary-service-provider approach; (4) conducting support-based, consultative home visits; and (5) consulting collaboratively in child care through integrated therapy.

Although each of these components can be used separately, they are enhanced when used together. Because of the specific goals of the training and time management issues, this training focused on the first two elements.

Session 2: Ecomap and the RBI. An ecomap is a drawing of the family and their perceived supports. By developing it, professionals get to know the family ecology. Completing an ecomap in the early stages of contact with the family is useful for (a) showing interest in the whole family, rather than just the child and (b) developing a friendly and interested relationship with the family. Moreover, an ecomap gathers much information in a short amount of time, showing the people and agencies that provide formal and informal support, as well as the strength of the support or stress provided by each source of support (McWilliam, 2010a). Understanding the family and child ecology is a foundation for conducting the RBI and designing interventions that are relevant and meaningful to the family.

The RBI is a semi-structured interview designed to create a positive relationship with the family, assess family and child functioning, and develop a list of functional goals. The interviewer asks about daily routines, from the beginning to the end of a typical day. Within each routine, follow-up focus on what the whole family does, what the child engagement, social relationships, and independence are like, and how satisfied the family is with the routine. These questions require the interviewer to know about child development and family functioning and to have "good people skills". A well-conducted RBI will assess the goodness of fit between the child and the demands of the routine (McWilliam, 2010a; McWilliam et al., 2009).

Example video. The second day of training was devoted to the analysis of a video-recorded example of an ecomap and an RBI. The video display occurred at two separate times, first while explaining the development of the ecomap and the second while explaining the RBI.

Before the ecomap video was shown, a presentation about the need to develop the ecomap and the steps for conducting an ecomap were discussed. Trainees were asked to draw an ecomap as the parent on the video discussed her formal and informal supports. The video was stopped to highlight main points or when participants wanted clarification or discussion. Additional discussion occurred at the end of the video.

Before the RBI video display, a presentation about the need to carry out a routines-based assessment and the steps of this assessment was conducted. The trainees were informed about what was expected of them during the demonstration. Each participant received an RBI

Implementation Checklist (McWilliam, 2010b). As before, the video was stopped to highlight main points and to engage in discussion. After the video demonstration, relevant theory and information about critical interview behaviors were presented. Through the video demonstration, along with discussion, the trainees were expected to integrate new information and concepts.

Session 3: RBI skills practice. In the third session, trainees practiced RBI skills in a simulation exercise. ***Role-play*** is an active learning technique that allows the practice of a set of behaviors and skills required to carry out specific practices. van Ments (1999) distinguished between two major kinds of role-play: one dealing with the practice of skills and techniques and the other with the exploration of behaviors, feelings, and attitudes. The role-play used in this training was intended to take advantage of both kinds.

Three different vignettes, each describing an ECI case through the perspective of a mother, and the perspective of a regular teacher, based in the Portuguese context, were created. The participants were asked to organize themselves into groups of four or five and to decide on the role of each person: parent, regular teacher, interviewer, and one or two observers. Once the roles were assigned, each group received a vignette. The "parents" and "teachers" were instructed to read their roles and to prepare to make up details; they were also asked not to make the interviewers' role excessively difficult. The "interviewers" and "observers" received an RBI Implementation Checklist (McWilliam, 2010a, 2010b) and were both asked to read it. Whereas the interviewers used it mainly to prepare themselves, the observers used it to give feedback on the interviewers' performance.

Participants had 5 minutes to prepare themselves and were instructed to role-play an RBI, starting with an ecomap and concluding with the selection of goals by the family. The entire interview was planned to last 90 minutes. All groups role-played at the same time. During the role-play the trainer rotated among the groups to clarify remaining questions and, whenever appropriate, step in and model a specific role (generally as interviewer). Another function of the trainer was to keep track of the time, informing the trainees on which part of the interview they should be at particular times.

Debriefing is important in role-play. In this training, the first debriefing step was at the small-group level, when participants discussed their feelings and thoughts while playing their roles, including giving and receiving feedback from the observer(s). The second step was in the whole-group discussion.

Trainees were invited to talk about how they felt while playing different roles, and the trainer responded by exploring reasons for certain responses. The trainer also discussed

interviewing skills observed, along with hints for improvement. By the end of the debriefing, the trainer made sure all remaining concerns about how the role-play went were addressed.

After the first role-play, trainees were asked to conduct a different role-play, changing vignettes and roles. This second role-play followed the same procedures as the first but lasted for about half the time because and trainees, from time to time, were asked to jump further in the interview.

The main purpose for this role-play was to practice conducting an RBI in a safe and controlled environment. Interviewers received feedback related to the extent to which they followed the RBI structure. They also had an opportunity to discuss how they felt conducting the interview. They received feedback from the observer(s) and from the "parent" and "teacher" about how at ease and comfortable these players felt. Finally, in the whole-group debriefing, they had the opportunity to hear about each others' experience and to consider and reflect on alternative viewpoints and on their own personal competence and values.

Session 4: Functionality. The whole training is a process for arriving at the heart of one issue: functionality. Most preservice training about assessment and intervention is organized according to traditional developmental domains such as motor, cognitive, communication, adaptive, and social development, focusing on identifying and correcting deficits. The functional approach proposed by RBEI focuses on the skills needed in the home, community, and classroom, to promote child and family success in these environments. It is therefore associated with the functional domains of engagement, independence, and social relationships (McWilliam, 2010a).

Portuguese law requires child and family assessment to be documented with the use of ICF so a profile of functionality can be identified. Hence, we provided trainees with information on the ICF, along with examples of how to use the RBI to contribute to the development of a meaningful ICF profile.

Functionality profile: International Classification of Functioning, Disability and Health. Developed by the World Health Organization (WHO, 2001), the ICF belongs to the family of international classifications of individuals' health. As defined by WHO (1946), "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

The ICF is based on a dynamic model of functioning that reflects the ongoing influence of the environment on the person. Thereby, it is a multidimensional classification consisting of four interrelated components: body functions, body structures, activities, and participation (WHO, 2001). For children and youth, in part because of their rapid development, people

familiar with the ICF saw the need to develop ICF-CY (WHO, 2007), which expands ICF coverage by providing specific content and additional details across the developmental stages

Children's development depends on continuous interactions with the family and other caregivers. Despite the fact that functioning should be assessed in the context of the family system, Portuguese teachers have been found to develop functionality profiles assuming a linear relationship between participation restrictions and disability, making little reference to functional content or the environment (Ferreira et al., 2012).

Professionals might persist with this diagnosis-driven approach to assessment because it is difficult to shift to a functional way of thinking. One tool that combines a developmental, a functional, a family-centered, and an ecological perspective in assessment is the MEISR (McWilliam & Hornstein, 2007), described in detail in the next session. The MEISR is developmental in that the items are organized according to the ages at which the skills usually begin. It is functional in that the skills are those commonly needed for successful participation in everyday routines. It is family centered in that families (not professionals) score their children's functioning. It is ecological because the profile is organized by everyday routines. After the pilot study, in which the need for addressing problems with completing the profile with reference to ICF-CY was detected, a cross-walk of the MEISR with the ICF-CY was presented in the final version of the training (Boavida et al., 2013).

MEISR. The MEISR (McWilliam & Hornstein, 2007) is an instrument designed to develop a profile of functioning of children younger than 5 years old. It is meant to be completed by a caregiver who knows the child in the home or, as we suggest in this training, by the interviewer, after conducting the RBI, based on the information provided by the caregiver. Over 300 items representing functional skills are organized by everyday home routines. Each item is coded according to the corresponding functional area (engagement, independence, or social relationships), developmental domain (cognitive, communication, motor, adaptive, or social), and child outcome (social relationships, taking action to meet needs, or acquiring knowledge and skills).

Writing a functional profile. The first purpose of this activity was to provide the trainees guidelines for writing the profile, which was new for most of them. Second, we hoped the trainees would see the value of both functionality and teamwork.

After briefly reviewing the ICF-CY and presenting the MEISR, the trainer gave each participant a copy of notes taken during the video-recorded RBI participants watched in the second session. In groups of four-five participants, they were given 50 minutes to complete the following four steps for writing the child functionality profile:

1. List RBI information regarding child functionality and context;
2. Complete the MEISR with the information listed in the previous step;
3. Assign the relevant qualifier for each ICF-CY code checked in MEISR, and considering the expected typical development for a child of the same age,
4. Write a short profile describing the child's significant characteristics for the context and indicating, for each characteristic, the ICF-CY category and qualifier in brackets.

After trainees wrote their profiles, a whole-group discussion took place. First, the different profiles were presented, compared, and discussed. Finally, trainees were invited to reflect and compare this method for writing profiles with the way they had been writing profiles.

Writing functional goals and objectives. We developed this training with a particular outcome in mind: that trainees would be able to write functional goals and objectives. Goals and objectives are only as functional as the assessment that produced them (McWilliam, 2010a). One can write an existing goal/objective coming from a standardized test and end up with a well-written nonfunctional goal/objective. The RBI produces goals and objectives the family has chosen as well as the necessary information for writing them in a functional way.

A copy of "steps to build a functional goal/objective" was supplied to trainees along with a succinct introduction. Next, the whole group wrote the first child goal chosen by the family in the video demonstration of the RBI. They also wrote the first family-level goal.

Once there were no further questions, small groups were formed, and each group wrote two child-level goals and one family-level goal from the RBI video. All the written goals were discussed by the whole-group. Trainees were encouraged to practice the exercise with goals not discussed at the session and to take questions to the next session.

Session 5: Functional goals, other RBEI components, and follow up. This session began with the presentation and discussion of the goals written by the trainees at home during the week. Once all the questions were addressed a summary of the training took place.

Other RBEI components. As we stated before, the different RBEI components can be used separately but their efficacy is enhanced when there are used together. So, we could not finish the training without an overview of how what the trainees have learned could be used in the big picture, namely with the other RBEI components: (1) Transdisciplinary Service Delivery, (2) Support-Based Home Visits, and (3) Collaborative Consultation to Child Care.

Follow up. Feedback about skills' implementation in practice contexts and follow-up coaching are efficacious components of in-service training (Snyder, Hemmeter, & McLaughlin, 2011). Accordingly, these components are an integrated part of this training program.

The last part of the fifth day of training was devoted to the preparation of the follow-up. The proposed field work was presented and, in small groups, trainees discussed barriers, and respective solutions, to its realization. Finally, information on the e-learning platform that was to be used for follow up purposes, the way to access it, and how to use it was presented and discussed.

During the succeeding 3 months, trainees were expected to conduct a RBI and write the functional goals and objectives in practice contexts. During the first 3 weeks, a question was placed weekly at the platform, addressed to all the trainees, and the answers, questions, or comments were open to discussion. After these 3 weeks, each trainee was to send a video recorded RBI and post the RBI functional goals through the platform, receiving written feedback both on the RBI and on the goals writing.

Session 6: Final feedback. In addition to the individual written feedback, an optional final 3-hour session was held. In addition to providing live feedback, including suggestions for improving the training, trainees could have any remaining questions answered.

EVALUATION

Participants

The 35 Local Intervention Teams working in the Lisbon and Tagus Valley area were invited, through the region Subcommittee of the Portuguese National System of Early Childhood Intervention (created with Decree-Law No. 281/2009), to participate in this training. Along with the team members the invitation was extended to other professionals working directly or indirectly with the teams. The training was conducted with the first 14 groups of professionals (working in Local Intervention Teams, in private nonprofit institutions for early childhood education and care, school groups, and other community services), that contacted us showing their interest. This training was offered to participants free of charge and was certified by the Conselho Científico-Pedagógico da Formação Contínua (i.e., the Scientific-Pedagogical Council for Continuous Training) awarding one credit to each participating teacher.

From the 284 professionals that attended the training 201 completed it and we have collected 183 IEP/IFSP prior to the training and 109 after the training.

Current findings report to the participants in this training that, (1) completed the training, (2) provided pre-training data, and (3) provided post-training data. Eighty professionals met these requirements (Boavida, Aguiar, & McWilliam, 2012). Thus, these 80 professionals each supplied one EIP or IFSP developed before the training and one developed after the training. Of these 80 professionals, 81% attended all the training sessions, 15% missed one training session, and less than 4% missed two training sessions. Participants were mainly teachers (21 ECI teachers, 17 Special Education teachers, and 23 regular classroom teachers), but 8 were therapists, 5 were psychologists, and 4 were social workers. Thirty-eight of them worked at a Local Intervention Team, 14 at private nonprofit organizations for early childhood education and care, 24 at school groups (a conglomerate of schools across ages), and one at other community service. The professionals' average age was 38.62 years (*SD* = 8.29), they had an average of 17.25 years of education (*SD* = 1.56), and they had an average of 14.01 years of service (*SD* = 8.41).

Method

To evaluate the quality of IEP/IFSP goals and objectives written by the professionals, we used the Goal Functionality Scale III (GFS III; McWilliam, 2009). Designed to evaluate the quality of IEP/IFSP goals and objectives, the GFS III consisted of seven items rated on a scale of 1-4 (as described in the pilot study section earlier in this article). As Cronbach's alpha coefficient for all 7 items was .92, GFS III overall mean score,computed as the mean of scores across all goals, was used. The mean was necessary because each plan could have a different number of goals. For each goal, we computed the sum of scores, so the higher the score for a goal/objective the higher the quality. The highest possible score was 28, and the lowest possible score was 7.

Goals with very low scores were not written as actual goals but as (a) announcements of development areas to be addressed (e.g., To develop gross motor skills), (b) strategies (e.g., Highlight and enhance attitudes of fulfillment of tasks), or (c) otherwise missed all 7 items (e.g., José will observe other children playing, at the park and at school, with physical or verbal prompt from the adult. We will know he can do this when he performs this activity only with verbal or physical prompt from the adult). Examples of objectives with the highest scores are (1) José will participate in diaper changing and dressing times, at home and day care, by raising his legs or giving the asked body part (hand, arm, foot, leg). We will know he can do this when he raises or gives the requested body part, when asked, 4 times a day at any of the described times, at home and at child care in 3 weeks; (2) Maria will participate in meals, by eating the second dish with a spoon by herself. We will know she can do this when she eats by herself, with a spoon, half of the second dish, at one of the principal meals (lunch or dinner) of the day in 2 weeks.

Two researchers scored the GFS III, one rating all the IEPs, and the other independently rating 33% of them. The obtained interrater exact agreement was 79.75%, with a weighted kappa of .59, and an intraclass correlation coefficient of .70.

Findings

This evaluation showed that, after the training, the EIP/ IFSP developed contained fewer goals/objectives and more functional ones. Before the training, plans had an average of 23.86 child level goals/objectives (SD = 35.86). After training, the number plummeted to an average of 5.22 child level goals/objectives per plan (SD = 2.24; t (79) = 4.78, p < .001, d = 0.99). Before training, the average GFS III score per plan was 8.94 (SD = 3.03). After training, the score rose to 19.77 (SD = 4.09; t (67) = -16.09, p < .001, d = 3.04), as shown in Figure 1. Both changes represent a large effect size.

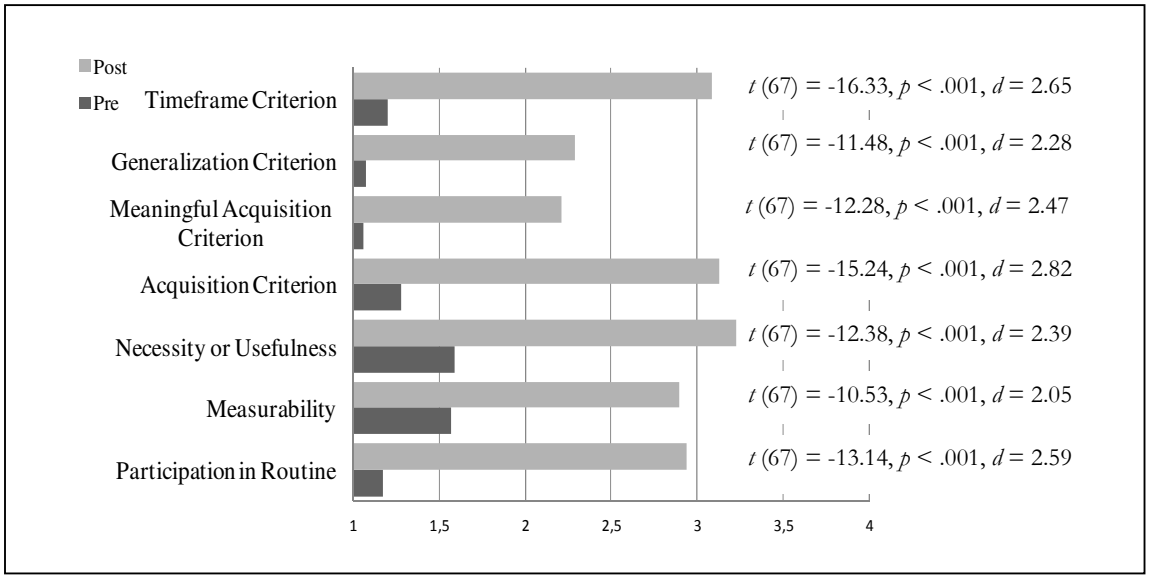

Figure 1. Pre and post-training overall mean quality by GFS III item

DISCUSSION

The training described here had the desired effect: Goals and objectives improved. The excessive number of them, per plan, came down to a reasonable size, and the quality ratings went up, by over three standard deviations. This training has three kinds of implications for ECI practice.

Implications of Improving Goals and Objectives

First, the implications of improving goals/objectives are that the actual support early childhood interventionists provide could be improved. This link between goals and support would only be true if professionals actually follow the plan. One needed area of research is about

the extent to which goals are actually addressed and whether that association is mediated by the functionality of the goals. In other words, if goals are less functional, do early childhood interventionists address them less than if they were more functional? Does functionality make any difference at all to whether goals are addressed? Accountability systems are not tied to children's performance on goals, which has its advantages and disadvantages. The advantage of not taking children's goal attainment seriously is that the criteria set for goals are imprecise and professionals could attenuate them so they, the professionals, would look more successful. The disadvantage of not including goal attainment in accountability systems is that it diminishes the incentive to establish high-quality goals and to address them. In the U.S., for example, the federal government holds states accountable for child progress on ratings of three supposedly functional child goals and objectives, not on goal attainment.

Implications of Training Personnel to Interview Families

When early childhood interventionists are trained to interview families about the details of their daily lives, three things can happen. First, families by and large like having someone knowledgeable show interest in the details of their parenting. Families might be anxious, especially at entry to the program, and eager to have someone hear about what's going on in the home. The RBI is considered a fast way of developing a positive relationship with the family (McWilliam, 2010a). Second, in the course of talking about their daily lives, families disclose much information about their family life, beyond simply what the child does. The interviewer does not have to be intrusive for families to end up talking about family-level issues. Third, early childhood interventionists have the opportunity to become conscious of the effects of the environment on child and family functioning. As they hear families talk about how the social (e.g., other family members, family rituals) and physical ecologies (e.g., furnishings, toys, spaces) affect and are affected by the families' interests and abilities, they learn about the bioecological nature of development (Bronfenbrenner, 1986).

Implications of Organizing Intervention by Routines

How a child experiences breakfast time, hanging-out time with his or her parents, bath time, diaper changes, and so on form that child's curriculum. Caregivers of the child are the child's teachers. These routines or ecocultural niches (Weisner, 2002) are the daily lessons where the teaching occurs. If the child attends a classroom program, such as a nursery or preschool, another whole set of routines and caregivers are added to the home ones. ECI specialists who understand this basis of functioning within routines recognize that cultural forces play themselves out in routines. Differences between families in ethnicity, socioeconomic status, or belief systems about childrearing are manifested in how they do breakfast time, hanging-out time, bath time,

diaper changes, and so on. The training described in this paper emphasized routines as the basis for assessment and intervention. Trainees might therefore be expected to be effective in responding to cultural variation, to individual-family variation, and to the goodness of fit between the demands of routines and the abilities and interests of children and their families.

In conclusion, the workshop-based training on the routines-based early intervention model, with a focus on the Routines-Based Interview, can result in goals/objectives of high quality. It can also transform professionals' understanding of how children learn and how ECI works.

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CHAPTER IV

Rasch Analysis of the Routines-Based Interview Implementation Checklist[iii]

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ABSTRACT

Routines-Based Interview (RBI) is useful for developing functional outcomes/goals, for establishing strong relationships with families, and for assessing the family's true needs. This study is part of a larger study in which professionals were trained using the RBI Implementation Checklist (Rasmussen & McWilliam, 2010). Here, the authors sought to investigate the psychometric properties of the RBI Implementation Checklist, conducted by 120 early intervention professionals working in the Lisbon and Tagus Valley Regions, Portugal, specifically looking at the probability of correct responses on the items as a logistic function of the difference between the person and the item parameters. Rasch analysis (Rasch, 1980) was selected for this study so we could answer questions both about how the measure performed (items on the RBI checklist) as well as how the interviewers performed (interviewers observed conducting the RBIs) and related these performances to one another.

Results of the analysis indicate that scores on the RBI Implementation Checklist were reliable and it can be considered to have levels of fidelity. The checklist could possibly benefit from more difficult items to measure the true performance of the few people that had scores higher than the most difficult items and also from additional items that focus on the family.

INTRODUCTION

Early intervention practitioners around the world are learning how to conduct Routines-Based Interviews (RBIs). The RBI has strong face validity, even though its feasibility can be challenging. Early interventionists working with children birth to age 6 and their families have found the RBI useful for developing functional outcomes/goals, for establishing strong relationships with families, and for assessing the family's true needs. The main tool that trainers use to teach others on the RBI is the RBI Implementation Checklist (Rasmussen & McWilliam, 2010). Checklist training is one of the few effective ways of training people to implement a practice. Checklists containing the steps in a practice produce data on the fidelity with which the observed person carries out the practice: The more steps correctly performed, the more faithful the performance is to the specified practice. The content of the checklist is therefore important. Do the items work well to describe the practice, provide opportunities for feedback, and produce useful scores? This study sought to investigate the psychometric properties of the RBI Implementation Checklist, specifically looking at the probability of correct responses on the items as a logistic function of the difference between the person and the item parameters.

Routines-Based Interview

Early interventionists conduct the RBI for three reasons (McWilliam, 2010a, 2010b). First, it provides a rich and thick description of child and family functioning. Because the conversation about each routine of the day is detailed, as described below, the interviewer learns much about everyday functioning of the child and his or her family members. Second, the interviewer establishes a positive relationship with the family. The intimacy of a well-conducted interview kick-starts a proactive partnership between the family and the interviewer. Third, the RBI always ends with a substantive, functional list of outcomes/goals, addressing both child- and family-level needs. The interviewer adds measurement criteria to the outcomes, which become the outcomes on the individualized family service plan (IFSP). In the U.S., many school districts discourage or patently disallow family-level goals from appearing on the individual education program (IEP), but the child-level goals can become the goals on the IEP.

The main steps of the RBI begin with the interviewer's asking the family about their main concerns. This question ensures that questions during the rest of the interview

address these concerns. The interviewer asks the family member being interviewed to go through the day. During the discussion of each routine, the interviewer asks many follow-up questions about the child's engagement, independence, and social relationships during that routine (McWilliam, 2010a). After discussing all the routines, the interviewer asks about the family's main worry and what the interviewee would like to change. These two questions are more global than are those about specific routines, and they allow the interviewee to think about larger issues, such as household finances, what will happen to the child in the future, and changes in the family's quality of life. The interviewer or assistant interviewer reviews the main points of the interview and ask the family member to identify outcomes/goals. The interviewer asks the family to put those outcomes/goals into priority order. Knowing what is most important down to what is least important helps the team to determine services and guides ongoing supports to the family.

The product of the RBI, therefore, is the informal list of outcomes/goals. These are often noted in the family's own words but listing the routines in which the family member said the outcome/goal was needed. Child-level goals are functional because they address the child's participation in routines, at the highest appropriate level. Consistent with the World Health Organization's International Classification of Functioning for Children and Youth, successful functioning is tied closely to participation in home, "school," and community environments. In addition to these child-level outcomes/goals, the list should almost always include the families' goals for themselves, not only the child (McWilliam, 2010b).

A pilot study comparing IFSPs conducted with the RBI to IFSPs conducted without the RBI, controlling for professional (the same professionals conducted IFSPs with and without the RBI) (McWilliam, Casey, & Sims, 2009). IFSP outcomes/goals conducted with the RBI were more functional, as measured by raters' blind to the research conditions. Implementation of the RBI, although distinctly more faithful to the model than the non-RBI IFSPs, was still substandard, indicating the 1-day workshop was not enough.

Researchers have developed an intervention package featuring learning objects placed on a state's early intervention data system (Ridgley, Snyder, McWilliam, & Davis, 2011). The topics addressed in the learning objects included identifying informal supports, conducting an RBI, and using multiple assessment sources. Two districts implemented the package, and two comparable districts were used for comparison. The experimental group scored higher than the control group on knowledge and skills, family participation in

meetings, and the quality of IFSP documents. In this study, the singular effects of the RBI could not be separated from the effects of the package of interventions.

In the larger study of which the current one is only a part, professionals were trained using the RBI Implementation Checklist (Boavida, Aguiar, McWilliam, & Pimentel, 2011). Goals went from well over 20 down to a manageable 10-12, and the functionality scores increased. Participants in this study received much more intensive training than did those in McWilliam et al. (2009).

To provide intensive enough training, McWilliam and his colleagues have, since 2008, held an annual, week-long certification institute. This institute has created a cadre of trainers available across the United States, which ensures fidelity to the model and consistency of branding. It lasts five days, with one demonstration and three feedback-oriented practice interviews, in which participants take different roles at each interview. In addition, workshops on training, logistics, and outcome/goal writing are provided. Twenty states have trainers, with some having multiple trainers. Some states and the Northern Region of New Zealand have, with our help, have replicated the institute and approved their own trainers.

Checklists

Training on the RBI hinges on structured, performance-based feedback, which entails observing an interviewer and providing detailed feedback (Barton, Kinder, Casey, & Artman, 2011). The tool to focus the observation is a checklist of behaviors that should be performed when carrying out the practice—in this case, when conducting an RBI. The lowly checklist, as Gawande (2010) called it, lays out the expectations, thereby serving as a sort of task analysis. Because the task is a desired practice, it provides a scoring method of fidelity of implementation (Casey & McWilliam, 2011). Skill checklists are not the same as diagnostic or symptom checklists such as the Child Behavior Checklist ((Achenbach, 1991). Research on the efficacy of skill checklists comes from a variety of fields, including creativity training (Scott, Leritz, & Mumford, 2004), clinical psychology (Foley, Bedell, LaRocca, Scheinberg, & Reznikoff, 1987), and parent training (Sanders & Woolley, 2005). Gawande, a surgeon himself, discovered the value of checklists when he determined that one should be used to train the staff in carrying out a procedure he had designed. Checklists have been found effective in promoting successful communication among surgeons, nurses, and anesthesiologists (Lingard et al., 2008); in training on surgical skills

(Reznick & MacRae, 2006), and in training intraoperative laparoscopic skills (Vassiliou et al., 2005).

In our work, checklists are used to train teachers and therapists on the Engagement Classroom Model (McWilliam & Casey, 2008) and to monitor the implementation of the model with fidelity.(Casey & McWilliam, 2011). They are also used to train professionals in the RBI Certification Institute. Checklists have been provided for numerous practices in working with families of young children with special needs (McWilliam, 2010b).

Rasch Analysis

Because the RBI Implementation Checklist has been the core fidelity check for the RBI and the main method for training professionals to conduct RBIs, in both the U.S. and Portugal, we were eager to determine the extent to which the scoring method and summated scores in the data we collected were defensible. Rasch analysis (Rasch, 1980) was selected for this study so we could answer questions both about how the measure performed (items on the RBI checklist) as well as how the interviewers performed (interviewers observed conducting the RBIs) and related these performances to one another. Questions about the measure's performance tell us about the relative fit and difficulty of each of the items. For example, what is the order of difficulty of the items? By examining how the people performed, we can ask questions such as whether we have enough items to capture all levels of performance. This helps those refining the measure to know if more or fewer items are needed at the "easy" or "difficult" end, and so forth. Rasch is the only item response theory (IRT) model that calculates a person's performance using the total score across items. Thus, the model is described as a "single parameter" model (Wright & Masters, 1982).

The partial-credit Rasch model (PCRM) is used with measures that extend beyond the dichotomous "present" or "not present" and include *levels* of performance (Wright & Masters, 1982). The model allows comparisons of partial credit data resulting from an instrument where partial credit is given based on partial success or answer of an item (Bond & Fox, 2007). For the RBI checklist, a rating of "1" indicates not observed, a "3" observed, and a "2" indicates observed part of the time, but not consistently. The PCRM allows for a more precise accurate measure of these partial credit options as compared to the dichotomous or rating scale Rasch models.

The Rasch model makes it possible to compare all interviewers and items by placing them on the same scale, essentially transforming the ordinal level data to

interval/ratio data. Rasch analysis leads to a visual map of the item difficulty related to person ability (or performance). The items are found on the right side of the map, with the more difficult items at the top. The person scores are found on the left side of the map, with the highest performing people at the top.

Other early intervention researchers have used the Rasch approach. For example, one such analysis of the Battelle Developmental Inventory, 2nd Edition, Screening Test allowed the researchers to support the reliability and validity of the five domain scores and the total score (Elbaum, Gattamorta, & Penfield, 2010). Rasch modeling was also used to establish cutoff scores at 6-month age intervals on the Assessment, Evaluation, and Programming System (AEPS) (Bricker, Yovanoff, Capt, & Allen, 2003) and subsequently found to classify the children most eligible for services, albeit with some false positives (Bricker et al., 2008). Rasch analysis has also been used to examine the effects of changing the IFSP form (Jung, Guskey, & Cunningham, 2007) as well as to validate a measure of IFSP quality (Bradley, Jung, & Sampson, 2007; Jung, Sampson, Bradley, & McWilliam, 2006).

In the present study, we wanted to judge whether adding scores to the RBI Implementation Checklist is justified, by testing the fit between the data and our theoretical model, using Rasch analysis.

From a training program in Portugal, we had data that had the integrity to be analyzable with Rasch methods. The purpose of the study, therefore, was to determine how well the scoring method worked, what the relative contribution of different items was to the data, and whether modifications to the checklist were advised.

METHOD

Participants

To recruit participants, we contacted the Lisbon and Tagus Valley Subcommittee of the Portuguese National System of Early Childhood Intervention (one of the 5 National Subcommittees created with Decree-Law 281/2009 that established the National System of Early Childhood Intervention). We invited the 35 local intervention teams in the area to participate in a 25-hour training program on how to write IEP/IFSP quality goals and objectives with the use of the RBI. The invitation was extended to professionals working directly (team members) or indirectly (e.g., classroom teachers working with the teams, professionals of services working closely with the teams, special education teachers

working in the same area) with children and families. The first 14 teams contacting us were enrolled.

One hundred and twenty early intervention professionals who both completed the training and provided us a video of their conducting the RBI with families were included in the study. The professionals included 56 local-intervention-team members (23 teachers, 20 therapists, 8 psychologists, 6 social workers), 28 teachers working in public schools (11 regular classroom teachers, 17 special education teachers), 32 classroom teachers working in private daycare and preschool centers, and 3 professionals working at a Center for Family Support and Parental Counseling (2 psychologists, 1 social worker). Some participants did not provide all their demographic information. Participants' age averaged 37.25 years (SD = 8.74; N = 113), their education averaged 17.05 years (SD = 1.46; N = 111), and their professional experience averaged 13.21 years (SD = 8.82; N = 112).

Measures

RBI Implementation Checklist. We evaluated the quality of the RBIs conducted by the participants with the RBI Implementation Checklist (McWilliam, 2010b). This 36-item instrument was designed to assess the fidelity with which the RBI was implemented. The checklist items are listed in Table 1. Each item was rated on a 3-point: (1) *not observed*, (2) *observed at times but not consistently*, and (3) *observed*. An overall quality score can be derived by summing items and transform them into a score out of 100, so the higher overall score the higher the quality. In this study, the internal consistency of the RBI Implementation Checklist scores was a Cronbach's alpha of .86.

Table 1. RBI Implementation Checklist Items

1.	Did the interviewer prepare the family, at least the day before the interview, by telling them (a) that they will be asked to describe their daily routines, (b) they can choose a location, and (c) they can choose who participates (including whether it's one or both parents)?
2.	Did the interviewer greet the family and then review the purpose for the meeting (e.g., to get to know the family and to determine how best to provide support to their child and family)?
3.	Did the interviewer ask the parents whether they have any major questions or concerns before starting the interview?
4.	Did the interviewer had a good flow (i.e., conversational, not a lot of time spent writing)?
5.	Did the interviewer maintain focus without attending too much to distractions?
6.	Did the interviewer ask follow-up questions to gain an understanding of functioning?
7.	Did the interviewer address all of the family's routines, especially by following the parents lead?
8.	Were there follow-up questions related to engagement?

9. Were there follow-up questions related to independence?
10. Were there follow-up questions related to social relationships?
11. Were there follow-up questions developmentally appropriate?
12. Were open-ended questions used initially to gain understanding of the routine and functioning (followed by closed-ended questions if necessary)?
13. Did the interviewer find out what people in the family other than the child are doing in each routine?
14. Did the interviewer ask for a rating of each routine?
15. Did the interviewer find out how satisfied the family is with each routine through both description and rating?
16. To transition between routines, was the question "What happens next?" or something similar used?
17. Did the interviewer use good affect (e.g. facial expressions, tone of voice, responsiveness)?
18. Did the interviewer use affirming behaviors (e.g., nodding, positive comments, or gestures)?
19. Did the interviewer attempt to get the parent's perspective on behaviors (why he or she thinks the child does what he or she does)?
20. Did the interviewer use active listening techniques (e.g., rephrasing, clarifying, summarizing)?
21. If there were no problems in the routine, did the interviewer ask what the parent would next like to see?
22. Did the interviewer avoid giving advice?
23. Did the interviewer avoid unnecessary questions, such as the specific time something occurs?
24. Did the interviewer act in a nonjudgmental way?
25. Did the interviewer use "time of the day" instead of "routine"?
26. Did the interviewer return easily to the interview after an interruption?
27. Did the interviewer allow the family to state their own opinions, concerns, and so on (not leading the family towards what the interviewer thinks is important)?
28. Did the interviewer get information on the parent's downtime (any time for him- or herself)?
29. Ask the family, "when you lie awake at night worrying, what is you worry about?"
30. Ask the family, "If you could change anything about your life, what would it be?"
31. Did the interviewer put a star next to the notes where a family has indicated a desire for change in routine or has said something they would like for their child or family to be able to do?
32. After the interviewer has summarized concerns, was the family asked whether anything should be added?
33. After summarizing concerns (starred items), did the interviewer take out a clean sheet of paper and ask the family what they wanted to work on? (New List)
34. Did the interviewer ask the family to put the outcomes into a priority order of importance?
35. Did the interviewer discuss when the services will be decided upon – at this meeting or a subsequent one?
36. Did the interviewer thank everyone for their time?

A second observer independently scored 37 interviews (30.8%) to check interobserver agreement. Exact agreement on each item was 78.6%, and the intraclass correlation between the two sets of scores was .81.

Procedures

Participants completed a training program conducted in five weekly sessions of 4-4.5 hours. **Session 1** consisted of the ECI concept and philosophy (e.g., family centeredness, functionality, teaming) through brainstorming and the case method of instruction (McWilliam & Snyder, 1999), concluding with the presentation of the five components of the Routines-Based Early Intervention (RBEI) model (McWilliam, 2010a). **Session 2** was devoted to the first 2 components of the model and their instruments, namely the ecomap and the RBI, through an analysis and discussion of a video-recorded example. **Session 3** presented practice on RBI skills through role-play based on three vignettes, followed by small-group and whole-group debriefing. **Session 4** was focused on the assessment of functionality, using (a) the International Classification of Functioning, Disability and Health – Children and Youth Version (ICF-CY; required by decree-law 3/2008 and decree-law 281/2009); (b) the Measure of Engagement, Independence, and Social Relationships (MEISR; McWilliam & Hornstein, 2007) as a facilitator of the Child Functional Profile since it was cross-walked with ICF-CY (Boavida, Ornelas, Aguiar, & McWilliam, 2013), and (c) writing functional goals and objectives. After listening to a presentation about these instruments and procedures, participants wrote a profile and functional goals and objectives chosen by the family shown on the video-recorded RBI. **Session 5**, the last face-to-face session, involved practice on writing functional outcomes, a presentation on the three remaining components of RBEI model components (primary service provider, support-based home visiting, collaborative consultation to child care), and preparation for the follow-up field work. For the next 3 months, participants engaged in **field work**, assisted by an e-learning platform. Via this platform, each participant answered questions and submitted a video recording of an RBI she had conducted along with the respective goals she had written. The trainer sent an evaluation and final feedback to each of the participants. More information on the training is described in Boavida, Aguiar, and McWilliam (2013).

This training was conducted with 14 groups of professionals from January to July 2012. Of 286 professionals who started the training, 201 finished it, and 120 submitted complete and observable videos. This study was conducted with these 120. As described

earlier, the researcher who was also the trainer watched and scored each video with the RBI Implementation Checklist.

Data Analysis

To prepare the data for Rasch analysis using WINSTEPS, the data originally entered into an SPSS file were copied into an Excel workbook. In Excel, two files were created. One file consisted of the labels of the items on the scale, and the second consisted of only the raw scores, recoded into a space-delimited text file. The WINSTEPS control file was composed of these two files. In WINSTEPS, the PCRM (Wright & Masters, 1982) was employed to evaluate the psychometric properties of the instrument. Item and person ability estimates were calculated, as well as infit and outfit statistics for all items.

RESULTS

Chronbach's alpha gives a measure of internal consistency and was used as an estimate for reliability of the instrument (Chronbach 1951, 1970). The Chronbach Alpha person raw score test reliability was 93% and demonstrates the internal reliability of the RBI. This measure is independent of sample size and is largely uninfluenced by model fit and addresses whether or not the sample is large enough to accurately locate the items on the scale. The item reliability was 98% and is independent of test length as well as largely uninfluenced by model fit. The item reliability measures the variance of item difficulty, which indicates whether or not there is a wide enough difficulty range to offer a reliable evaluation as well as a large enough sample size. (Linacre 1997). The Chronbach's alpha and item reliability estimates indicate the instrument to be reliable.

To measure the accuracy of the RBI Checklist, item measures (ability), standard error estimates and outfit mean-squared values were calculated. The outfit measure gives the outlier-sensitive fit statistic and is based on the chi-square statistic. Thus, the outfit statistic tells us how well the item discriminates for people it should. In other words, were all people who scored high on the full measure observed doing the easier items on the checklist, and were all of the people who scored low on the full measure observed not demonstrating the more difficult items? The mean-square (MNSQ) values represented in the table are the chi-square statistic divided by its degrees of freedom, with an ideal score of 1.0. Only 6 of 36 had an outfit value that caused concern. These values were either one

standard deviation above or below the average item measure. These are summarized in Table 2 below.

Table 2 Average item Statistics

Item	Measure	Model	Outfit
22	-1.59	.18	2.64
25	-.1	.13	2.26
23	-.76	.14	1.7
3	.2	.13	1.56
36	-1.2	.17	1.51
33	1.28	.15	1.49
28	1.48	.16	1.43
19	1.51	.16	1.41
34	-.32	.14	1.38
31	-1.17	.16	1.16
26	-2.05	.24	1.15
27	-.52	.15	1.12
29	-.48	.16	1.1
35	.68	.14	1.04
30	-1.10	.16	1.01
24	-1.80	.28	.88
5	-2.71	.25	1.00
16	-.36	.14	.91
18	-1.87	.19	.99
4	.12	.15	.98
32	1.56	.17	.95
21	1.82	.17	.82
13	.16	.15	.95
2	.10	.14	.88
14	-.24	.15	.87
17	-.1.06	.16	.80
9	1.46	.18	.86
1	-1.35	.24	.81
7	.55	.15	.84
15	.76	.16	.82
10	1.98	.18	.76
12	.18	.16	.75
20	.17	.17	.75
6	.23	.15	.74
11	2.34	.21	.44
8	2.12	.18	.63
Model	**.00**	**.17**	**1.09**
Model	**1.28**	**.03**	**.43**

Figure 1 shows the item map for the RBI Implementation Checklist. Item maps show the differentiation of both items and persons along the same scale. People are denoted by an "X" on the left side of the map, and display a nearly normal distribution. People toward the top of the map show the highest levels of implementation, whereas people at the bottom of the map had lower levels of implementation. Items, found by label on the right, are also fairly normally distributed throughout the people.

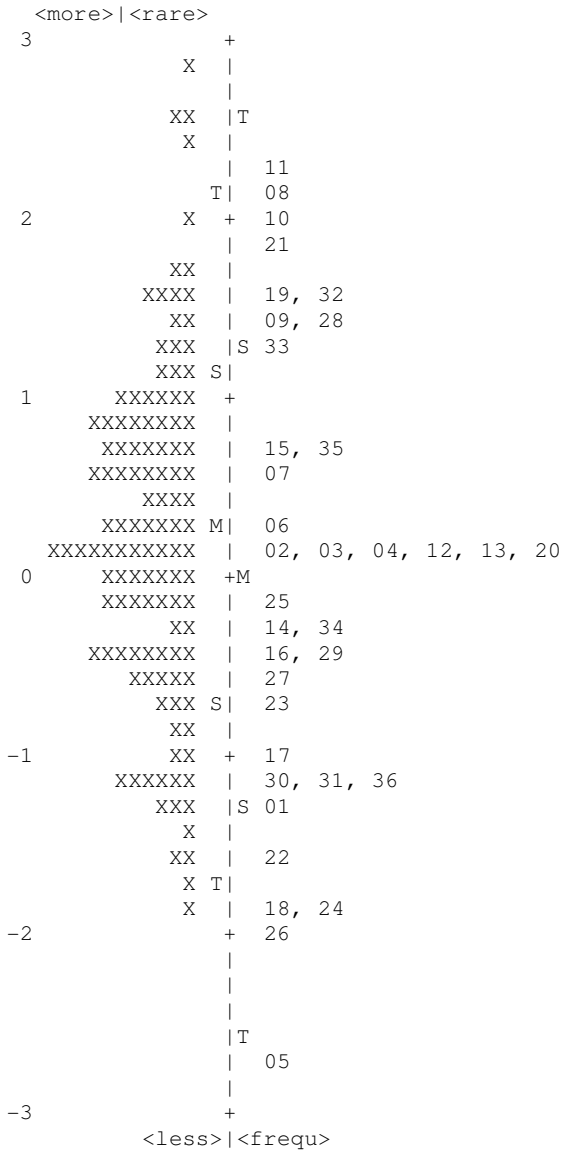

Figure 1 Person-Item Map for the RBI Implementation Checklist

In other words, people can be differentiated by the items. Items at the top of the variable map were the most difficult behaviors for interviewers to demonstrate. Items at the bottom end of the spectrum were the easiest behaviors interviewers to demonstrate.

In this item map, some people had scores higher than the most difficult items on the right, indicating more difficult items are needed to measure their true performance. On the other hand, the two easiest checklist items do not correspond to any people on the map, indicating these items might not provide any added value to the checklist.

DISCUSSION

Performance of the RBI Implementation Checklist

Results of the analysis indicate that scores on the RBI Implementation Checklist were reliable.

Overall, the measure was able to discriminate between people of varying levels of performance. Because some people were mapped higher than the most difficult items, the checklist could benefit from more difficult items. Conversely, Items 5 (maintains focus without distraction) and 26 (returns to interview after disruption) do not seem to add value to the measure. Before removing these items, though, it is important to consider why all interviewers displayed these behaviors. It is possible, for example, that interviews selected for submission to the researchers could have been those that did not include distractions, or that these items are easier to control, such as when the interviewers are aware that they are being filmed and evaluated . These items, then, might have value in a more authentic interview setting.

Performance of Interviewers

The performance of interviewers indicates that the RBI Implementation Checklist can be considered to have as having *levels* of fidelity. The ten items that interviewers most often demonstrated, or the "easier" items, consisted mostly of affect behaviors (e.g., used positive facial expressions, showed affirming behaviors, was not distractible, was polite, behaved nonjudgmentally, thanked family for their participation). Only interviewers whose overall scores were more than one standard deviation below the mean did not display these behaviors. Also included in the easier items were asking families what they would change about their life and placing a star next to the family's desire for change in a routine. Although Item 2 (greet family and review the purpose of the RBI) was not included in the easiest level, we believe if "greeting" and "reviewing the purpose" were separated, that

"greeting" would be an easier item because of its fit with the affect-related items. These items were likely the easiest because many are related to friendliness and might be natural conversational behaviors for many people who select service careers.

The middle level of difficulty included 17 items. These items included both processes (e.g., asked open-ended questions, reviewed purpose of meeting, good "flow," used active listening skills) as well as content (e.g., addressed each of the family's routines, asked for a rating of each routine, found out what other members of the family were doing, discussed services). In general, the content-related items were more difficult than the process related ones, although there was not a clear division between the two.

The nine most difficult items on the checklist were almost all related to follow-up questions. These items (e.g., asked follow-up questions related to engagement, follow-up questions were developmentally appropriate, summarized concerns and generated a new list of outcomes) required that interviewers have more than friendly affect and a basic understanding of the foundational questions to ask. These questions entail a deeper understanding of development and family functioning and may imply or reflect interviewers' knowledge and ability in these areas. The interviewers who demonstrated these behaviors appropriately veered from the structure to ask follow-up questions that produced more detailed information about the routines. Such questions are likely to capture information about independence, social relationships, and engagement to be able to draw out the family's priorities for their child and family. Also included in the more difficult items was asking the family about their "downtime." It is possible that this is a difficult item because it is unfamiliar territory for practitioners used to assessing only child performance. The checklist could possibly benefit from additional items that focus on the family. Although each of the items on the checklist is important as a fidelity check, a focus on and expansion of these more difficult items in enhancing the training is important to ensure mastery of the interview.

With the increasing popularity of the RBI, the operational definition of this process has become important. Some early intervention/early childhood special education professionals are using the term "RBI" to describe a short conversation about a typical day, others omit key ingredients such as the worry and change questions, and yet others do not include outcome/goal selection as part of the interview. Therefore, for hermeneutic purposes, if no other, it is important to have a measure of fidelity to the RBI as used in a routines-based approach to home- and community- (i.e., classroom-) based supports to young children with disabilities and their families. The RBI Implementation Checklist, from

this analysis, appears to work well to provide a continuous-variable score, from those who conduct an RBI with fidelity to those who do not.

Fidelity to a model has become especially important with the advent of implementation science (Ruble & McGrew, 2013). Not only is adherence to a model important for ensuring that the key factors that made the model effective are maintained, but, when studying the impact of model adoption, evaluators need to know that the model really was being implemented. Although Cicero was ostensibly[iv] talking about constancy in personal relationships and politics, his words are applicable for early intervention and implementation science: "Nothing is more noble, nothing more venerable than fidelity. Faithfulness and truth are the most sacred excellences and endowments of the human mind."

[iv]This quotation is often attributed to Marcus Tullius Cicero, but no original source has been found (http://www.quoteyard.com/nothing-is-more-noble-nothing-more-venerable-than-fidelity-faithfulness-and-truth-are-the-most-sacred-excellences-and-endowments-of-the-human-mind/)

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CHAPTER V

Results from a Training Program to Improve IFSP/IEP Goals and Objectives Through the Routines-Based Interview[v]

[v] Boavida, T., Aguiar, C., McWilliam, R. A., & Correia, N. (2013). Results from a training program to improve IFSP/IEP goals and objectives through the Routines-Based Interview. In preparation.

ABSTRACT

The focus of this study is an in-service training rooted in Routines-Based Early Intervention and designed to improve the quality of goals and objectives of individualized plans developed by Portuguese professionals involved in Early Childhood Intervention (ECI) and Early Childhood Special Education. This training actively involved a small number of trainees per group, providing multiple learning experiences across time, and high-rates of trainees' self-assessment and monitoring. We investigated (a) social validity, (b) medium-term outcomes of the training with inclusion of a control condition, (c) and variables that were associated with or explained changes in the quality of goals and objectives. Results seemed to support the training's social validity, the effectiveness of the training in improving the quality of goals and objectives in the school year after the training and discarded alternative explanations to the effectiveness of the training. The use of the Routines-Based Interview for developing goals and objectives and its implementation fidelity, as well as the percentage of time that professionals devoted to ECI, were associated with the quality of the goals and objectives. Despite these associations, findings from regression models suggest that the training alone was a statistically significant predictor of the quality of the individualized plans' goals and objectives.

INTRODUCTION

> Early Childhood Intervention (ECI) as recently been defined by Dunst (2007) as:
>
> …the experiences and opportunities afforded infants and toddlers with disabilities by children's parents and other primary caregivers that are intended to promote the children's acquisition and use of behavioral competencies to shape and influence their prosocial interactions with people and objects. (p. 162)

This definition embodies practices that are family-centered, routines-based, and focused on functionality, and that are supported by the theoretical models prevalent in Developmental Psychology, such as the transactional model (Sameroff & Fiese, 1990, 2000), and the bioecological theory (Bronfenbrenner & Morris, 1998). These practices are also supported by extensive research, previously reviewed by Dunst, Trivette, and Hamby (2007) and by institutional efforts developed by the Committee on integrating the Science of Early Childhood Development, established by the National Research Council and the Institute of Medicine (Schonkoff & Phillips, 2000); the Division of Early Childhood (DEC, Sandall, McLean, & Smith, 2000); the Workgroup on Principles and Practices in Natural Environments (2008); etc.

Unfortunately, research also shows that these practices are not yet a reality in the field. Families are still not full members of the team when it comes to decision making regarding assessment, planning, and implementation (Almeida, 2009; Campbell & Halbert, 2002; Dunst, 2007; Figueiredo, Aguiar, & Pimentel, 2013; Pereira, 2009; Pimentel, 2005). This consistent finding may be associated with the lack of quality found in the Individualized Education Programs (IEPs) and Individualized Family Service Plans' (IFSPs) goals and objectives, noticeable in low levels of specificity, functionality, and focus on natural routines and environments (Bailey, Winton, Rouse, & Turnbull, 1990; Boavida, Aguiar, McWilliam, & Pimentel, 2010; Campelo & Nunes, 2008; Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Jung & Baird, 2003; McWilliam et al., 1998; Pretti-Frontczak & Bricker, 2000; Sanches-Ferreira, Lopes-dos-Santos, Alves, Santos, & Silveira-Maia, 2013; Valentim, 2006; Yell & Stecker, 2003).

IEPs and IFSPs are considered essential mechanisms to guide Early Childhood Special Education (ECSE) and ECI (respectively) as they enable the establishment of individualized goals and the definition of strategies to achieve and monitor them, setting up the conditions needed for children with disabilities to acquire important developmental skills (Wolery, 2000). Nevertheless, these goals and objectives are only as functional as the assessment that produces them (McWilliam, 2010a) and if we want higher-quality goals and objectives we need professionals to integrate family-centeredness and functional premises in developing those goals. Provision of specific and effective training tailored towards these professional skills is, therefore, needed (Boavida et al., 2010; Sanches-Ferreira et al., 2013).

An approach that is starting to show positive effects in improving the quality of goals and objectives (Boavida, Aguiar, & McWilliam, 2013a; McWilliam, Casey, & Sims, 2009), in accomplishing more functional outcomes, and in reaching family-selected goals and objectives (Hwang, Chao, & Liu, 2013), is the Routines-Based Early Intervention (RBEI, McWilliam, 2010b). This functional approach focuses on the skills required in natural environments (e.g., home, classroom, and community) in order to promote family and child functioning. Through the Routines-Based Interview (RBI, McWilliam, 2005, 2010b) professionals are able to produce goals and objectives chosen by the family and are able to obtain the necessary information to write them in a functional way (McWilliam, 2010a).

The focus of our study is an in-service training rooted in RBEI and designed to improve the quality of IEP/IFSP goals and objectives developed by Portuguese professionals involved in ECI and ECSE. In developing such a training (see Boavida et al., 2013a), we have incorporated the following adult learning key principles: (1) consideration of trainees initial preconceptions and understanding, (2) provision of solid factual knowledge in the context of a conceptual framework, and (3) providing trainees with control over the learning process (Bransford et al., 2000). Recommendations based on a research synthesis on characteristics and consequences of adult learning methods and strategies, by Trivette, Dunst, Hamby, and O'Herin (2009), were also addressed in order to improve effectiveness. Consideration of these principles and recommendations resulted in a training that actively involved a small number of trainees, providing multiple learning experiences across time, and high-rates of trainees' self-assessment and monitoring.

Table 1 summarizes the features of this training, providing an overview of the number of sessions, the contents addressed in each session, and the methods used to

facilitate learning. A full description of this 25-hour training as well as short-term post-training results on IEP/IFSP's goals and objectives quality improvement are available from Boavida et al. (2013a).

Table 1. Training organization

Session # and Duration		***Main Content***	***Main Method***
1	4.5 h	Initial data collection + key concepts	Case story
2	4.5 h	Ecomap + RBI	Video demonstration + discussion
3	4.5 h	Ecomap + RBI	Role-play
4	4.5 h	MEISR + ICF-CY Profile + Functional Goals	Group work
5	4 h	Functional Goals + other RBEI Components	Presentation and discussion
Field work (3 months)		Ecomap + RBI + Functional Goals	Follow up questions (E-learning platform)
6	Feedback	RBI + Functional Goals	Written feedback

Abbreviations: RBI, Routines-Based Interview; MEISR, Measure of Engagement, Independence, and Social Relationships; ICF-CY, International Classification of Functioning, Disability, and Health−Children and Youth.

In this study, we aimed to (a) investigate the training social validity through trainees' perceptions of the training strengths and weaknesses; (b) investigate the training group IEP/IFSP's goals and objectives quality improvement, in the school year subsequent to the training, including a comparison with a control group; and (c) investigate associations between the quality of IEP/IFSP objectives and variables that describe professionals and training characteristics, aiming to identify predictors of IEP/IFSP' objectives quality improvement.

In addressing social validity we aimed to collect information on the acceptability of and satisfaction with the training, trying to identify its strengths and limitations from the perspective of the professionals receiving the training. This goal is based on the assumption that this subjective evaluation is important for understanding the effects of the training (Kennedy, 2005) and for informing future decisions on needed changes in contents and methods, aiming for increased effectiveness (i.e., adoption and maintenance of target skills).

The second goal extends the work previously reported (Boavida et al., 2013a), by focusing on medium-term outcomes of the training and trying to eliminate alternative

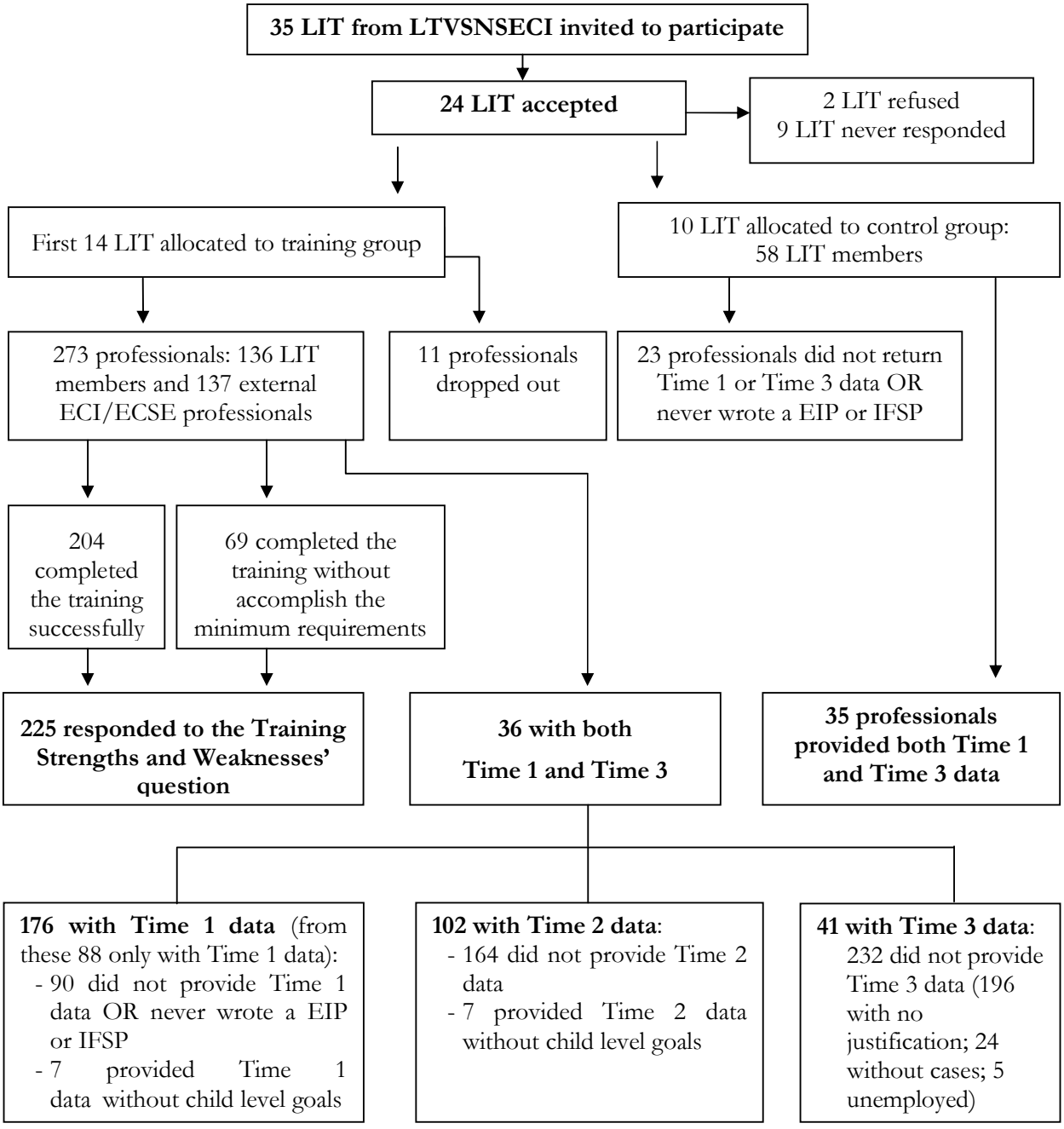
explanations for its effects by reporting the quality of goals and objectives provided by a control group.

Finally, our third goal focuses on the identification of variables that may be associated with the quality of IEP/IFSP goals and objectives and may help explain changes in such quality. Based on previous similar studies (e.g., Jung & Baird, 2003), we expected professionals' experience to be negatively associated with the quality of goals and objectives, and professional's former training to be positively associated with the quality of IEP/IFSP goals and objectives and quality improvement. We also expected professionals' fidelity in implementing target procedures (i.e., the extent to which teachers used the RBI) to be positively associated with the quality of IEP/IFSP goals and objectives.

METHOD

Participants

Participants were recruited through an invitation to the Lisbon and Tagus Valley Subcommittee of the Portuguese National System of Early Childhood Intervention (LTVSNSECI, one of the 5 National Subcommittees created with Decree-Law No. 281/2009, that established the National System of Early Childhood Intervention). All 35 local intervention teams in the area were invited to participate in a 25-hour training program on how to write IEP/IFSP high-quality goals and objectives with the use of the RBI. The invitation was addressed to team members and to other professionals that worked closely with each team (e.g., child care and education teachers responsible for inclusive classrooms attended by children served by the local intervention teams, professionals of services working closely with the teams, and special education teachers working in the same area). This training was offered to participants free of charge and was certified by the Scientific-Pedagogical Council for Continuous Training (i.e., Conselho Científico-Pedagógico da Formação Contínua), thus awarding one credit to each participating teacher. Figure 1 provides a summary of the flow of participants in each phase of the study. Throughout this report, Time 1 corresponds to pre-training data; Time 2 refers to data collected within three months of training completion; and Time 3 corresponds to data collected one year after Time 2.



Note. LIT=Local Intervention team; LTVSNSECI = Lisbon and Tagus Valey Subcomission of the National System of Early Childhood Intervention; IEP = Individualized Education Program; IFSP = Individualized Family Services Plan

Figure 1. Participants' flow throughout the study

Table 2 provides information on participants' characteristics, considering three separate groups: (a) participants that completed the training and responded to the

Questionnaire on Training Strengths and Weaknesses; (b) professionals that participated in the training and provided Time 1 and Time 3 data; (c) professionals assigned to the control condition, recruited from a waiting list of local intervention teams that accepted to participate in the training, and that also provided Time 1 and Time 3 data. Note that a small number of professionals had participated in a former training focused on the RBI.

Table 2. Participant characteristics

	Group that reported on training weaknesses and strengths			Training group with data from T1 and T3			Control group with data from T1 and T3		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Age	215	38.34	9.05	36	36.28	8.62	34	39.29	8.97
Formal education (years)	211	17.06	1.60	36	17.39	1.84	34	17.06	1.50
Experience (years)	203	14.49	8.99	36	12.44	8.30	33	15.58	8.59
	N	Valid %		*N*	Valid %		*N*	Valid %	
Sex									
Female	208	96.7		36	100		33	94.3	
Occupation									
Teacher	140	65.1		17	47.2		17	48.6	
Therapist	38	17.7		12	33.3		9	25.7	
Psychologist	19	8.8		5	13.9		5	14.3	
Social Worker	10	4.7		2	5.6		3	8.6	
Other	8	3.6		-	-		1 (nurse)	2.9	
Work setting									
LIT	113	53.1		29	80.6		35	100	
Public school	42	19.7		7	19.4		-	-	
Other	58	27.2		-	-		-	-	
RBI former training	30	14.0		11	30.6		6	17.6	

Note. LIT = Local Intervention Team; RBI = Routines-Based Interview; T1 = Time 1; T3 = Time 3.

Measures and Procedures

Training participants (1) completed a sociodemographic questionnaire before the training and in the following school year; (2) submitted, at Time 1, Time 2, and Time 3, an

IEP or IFSP along with a questionnaire about the procedures used to write the IEP/IFSP and about the child targeted by each plan/program; and (3) provided information on their perceptions of the training's strengths and weaknesses via an e-learning platform or e-mail ("This week you are asked to leave a reflection on the strengths and weaknesses of the training"). Control group participants (1) completed a sociodemographic questionnaire before the training and in the following school year; (2) submitted, at Time 1 and Time 3, an IEP or IFSP along with a questionnaire about the procedures used to write the IEP/IFSP and about the child targeted by each plan/program.

Qualitative data on Training Strengths and Weaknesses

To analyze participants' perceptions on training strengths and limitations, we conducted content analysis. Participants' open-ended answers were segmented into units of meaning. After reading the data, a set of categories and subcategories, and respective inclusion and exclusion criteria were developed. Two independent researchers coded all units of meaning, engaging in discussion each time 10% of the units were coded. Based on these discussions, a final revision of the coding scheme was conducted and all units were re-coded by both researchers. Overall, 1444 units of meaning were coded, using a coding scheme of 10 categories and 42 subcategories. Intercoder agreement was computed with ReCal2 (http://dfreelon.org/utils/recalfront/recal2/) and, at the subcategory level, mean percent agreement was 98.84 and mean kappa was .70.

Goal Functionality Scale III (GFS III; McWilliam, 2009)

To evaluate the quality of IFSP/IEP goals and objectives, we used the Goal Functionality Scale III (GFS III; McWilliam, 2009). It consists of seven items: (a) indication of participation in routines (engagement), (b) specificity of the desired behavior, (c) necessity of the skill, (d) quantification of the acquisition criterion, (e) relevance of the acquisition criterion, (f) relevance of the generalization criterion, and (g) relevance of the timeframe criterion. Each goal/objective was rated independently on a scale of 1-4: *not at all*, *somewhat*, *much*, or *very much* (respectively). The overall quality of a specific goal/objective was the sum of the scores across items, so the higher the score for a goal/objective the higher the quality.

A total of 3939 goals from 306 IEP/IFSPs were coded individually with GFS III. Within every IEP/IFSP, all goals were first coded using item number 1, and then all goals were coded using item number 2, and so forth. Two trained researchers rated the goals,

with one rating all of the IEP/IFSPs and the other one rating 20% of them. Mean exact agreement across all items was 78.98%, with a mean weighted kappa (K_w) of .59 and an intraclass correlation coefficient of .71. As Cronbach's alpha coefficient for all 7 items was .93, the GFS III overall mean score, computed as the mean of scores across all goals, was used. The mean was necessary because each plan/program could have a different number of goals. For each goal, we computed the sum of scores, so the higher the score for a goal/objective the higher the quality. The highest possible score was 28, and the lowest possible score was 7.

RBI Implementation Checklist

We evaluated the quality of the RBIs conducted by the participants, at Time 2, with the RBI Implementation Checklist (McWilliam, 2010b). This 36-item instrument was designed to assess the fidelity with which the RBI was implemented (for more detail on checklist items and fidelity see Boavida, Akers, McWilliam, & Jung, 2013). Each item was rated on a 3-point: (1) *not observed*, (2) *observed at times but not consistently*, and (3) *observed*. In this study, as the internal consistency of the RBI Implementation Checklist scores was a Cronbach's alpha of .86, the items mean was calculated – RBI implementation mean.

Data Analyses

Data on participants' perceptions of training strengths and weaknesses were examined to determine the social validity of the training. A mixed between-within subjects' analysis of variance was conducted to assess the impact of the training program on participants' scores of GFS III and the control group, so that alternative explanations to improvement in the quality of goals and objectives could be eliminated. Finally, we conducted a hierarchical multiple regression to evaluate the effect of the training on the quality of the goals and objectives and to evaluate the effects of other predictors, after controlling for training.

RESULTS

Participants' Perceptions of Training Strengths and Weaknesses

The outcomes of the analysis of participants' perceptions of training strengths and weaknesses is displayed in Table 3. From 1440 units of meaning analyzed, 1072 (74.2%) were related with strengths and 373 (25.8%) were related with weaknesses. The most

representative categories had subcategories that were used to code more than 4.5% of the total number of units. Since none of the weaknesses subcategories were used to code more than 4,5% of units, we decided to combine the subcategories that represented more than 1.5% and were most akin: (1) in the Methods category, we merged the subcategories Duration, Number of sessions and schedule; and (2) in the Content category, we combined subcategories of Applicability and Adequacy and the three subcategories of Deepening [RBI, International Classification of Functioning, Disability and Health (ICF), and Overall]. The displayed categories (Training Methods, Training Content, and Impact on Participants) represent 80% of the total number of units of meaning analyzed.

Table 3. Training strengths and weaknesses most frequent categories and subcategories

STRENGTHS (*N* = 1072; 74.2%)						
Category	***N***	**%**	**Subcategory**	***N***	**%**	**Examples**
Method	195	13.5	Active	72	5.0	"Practical techniques…role-play", "the practice way RBI was presented… showing the video", "work in groups", "small groups work", "training' practical character", "group dynamics", "joint development of functional goals".
			Structure	65	4.5	"Sessions' structure and presentation", "theoretical exposition, moments of group work, reflection and evaluation", "sessions were well structured", "the different methodologies used were appropriate to the different stages of training".
Content	301	20.8	Adequacy	84	5.8	"All exposed content was relevant", "one very relevant aspect was to know an innovator and promising new model", "the topic of training is very relevant and meets the difficulties in our intervention".
			Ecomap, RBI and goals	96	6.6	"Valuable help to define objectives in building a IEP", "The construction of goals. Often in our activity we forget that they must take into account parents' concerns and difficulties… and especially that goals should be part of their daily routines and they must be measurable", "functional goals choose by parents".
			Overall	73	5.1	"Richness of contents", "the topics covered in the sessions were all very interesting", "namely: revise the construction of an ecomap, make a RBI and know specific skill to conduct it, make a functionality profile based on MEISR, learning to set measurable and functional goals".
Impact	353	24.4	Reflection	126	8.7	"This training made me equate the relationship

						institution/family/child", "enabled the sharing of knowledge and reflection, questions…", "training was developed in an environment of reflection, exchanging ideas and learning".

STRENGTHS (continuation)

Category	*N*	%	Subcategory	*N*	%	Examples
			Knowledge acquisition	77	5.3	"improve my personal and professional practices", "undoubtedly contribute to the extension of knowledge in Special Needs Education", enriching us personally and professionally"
			View of practice	96	6.5	"has brought a new horizon in the way we work", "working as a starter for change", "refocus the intervention giving the family the leading role", " completely changed the paradigm that I had".

WEAKNESSES (*N* = 372; 25.8%)

Category	*N*	%	Subcategory	*N*	%	Examples
Method	135	9.3	Duration/ sessions/ schedule	101	6.9	"the duration of the training, which I think was too short for all content covered", "this would be a training to be developed with time", "there should have been more sessions with fewer hours", "too many hours per session".
Content	169	11.7	Applicability/ Adequacy	77	5.3	"I think that the involvement in this process was confusing, as the service I work doesn't work in this way and with these problems", "not being familiar with some technical terms", "no previous contact with IEP and require more time to systematize the information".
			Deepening (RBI/ICF/ Overall)	92	6.4	"I wish we had the opportunity to train some more skills necessary for the conduct of RBI", "…so that themes that are interconnected to the issue of training, and are essential to the work of LIT, namely the ICF, could be further explored" "and some topics of training could not be explored as I would like"

Improvement in the Quality of IEP/IFSP Goals and Objectives

Regarding training effectiveness, there was a significant interaction between group type (intervention or control) and time, Wilks' Lambda = .74, F (1.69) = 24.22, p<.0005, partial eta square = .26, with the training group alone showing improvement in the quality of goals and objectives over time (see Figure 2). There was also a substantial main effect

for time, Wilks' Lambda = .76, F (1.69) = 21.62, p<.0005, partial eta square = .24, and for group, F (1,69) = 26, p<000.5, partial eta square = .27.

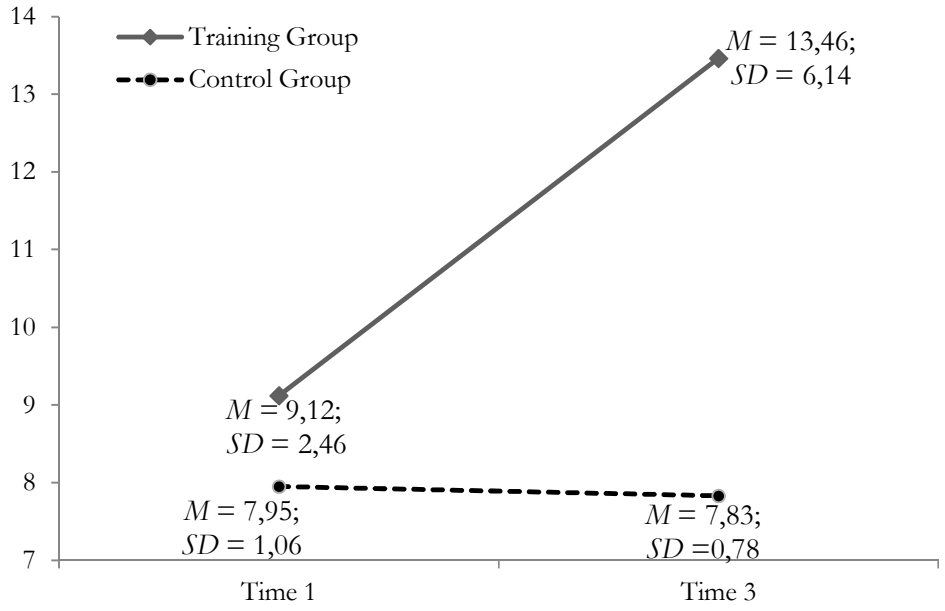


Figure 2. Interaction effect between group (training and control conditions) and time (pre-training and follow-up after one year).

Variables associated with the quality of goals and objectives and with quality improvement

In Table 4 we can find Spearman correlation coefficients among study variables. We found statistically significant moderate associations between the quality of goals and objectives at Time 3 and the quality of goals and objectives at Time 1. The quality of Goals and objectives at Time 3 were also associated with the extent to which participants consistently conducted an RBI (RBI implementation mean) at Time 2, and with conducting a RBI as a basis for developing IEP/IFSP goals and objectives at Time 1 and at Time 3. The percentage of time allocated to ECI in the participants working schedule was also associated with the quality of goals and objectives at Time 3, with participants devoting more time to ECI developing higher-quality goals and objectives.

Table 4. Spearman's Rank Order Correlation among study variables (n between 27 and 36)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. GFS III Time 3	-								
2. GFS III Time 1	.48**	-							
3. RBI Implementation Mean at Time 2	.39*	.15	-						
4. RBI conducted at Time 1 (coded as 1 = Yes, 2 = No)	-.49**	-.59**	-.35	-					
5. RBI conducted at Time 3 (coded as 1 = Yes, 2 = No)	-.38**	-.26	-.15	-.27	-				
6. Prior training in RBI (coded as 1 = Yes, 2 = No)	-.26	-.26	.06	.50**	.09	-			
7. % of time allocated to ECI	.44**	.42*	.41*	-.37*	-.34	-.13	-		
8. Age	-.08	-.20	-.18	.39*	.12	-.04	.13	-	
9. Years of service	-.02	-.24	-.16	.39*	.21	-.10	.15	.94**	-
10. Experience in ECI (years)	.07	.11	.12	-.04	-.17	-.17	.10	.34*	.26

*$p < .05$. **$p < .01$.

Two regression models predicting the quality of goals and objectives at Time 3 were tested. Model 1 included one predictor: quality of goals and objectives at Time 1. Model 2 included two additional predictors: conducting a RBI for developing Time 3 goals and objectives (coded as 1 = *Yes* and 2 = *No*) and percentage of time allocated to ECI. Inclusion of predictors was based on statistical criteria, related to the correlation matrix previously reported and to limitations in statistical power associated with the small number of participants providing data for both Time 1 and Time 3. In both models [F (1, 26) = 9.13, p = .006 and F(3, 26) = 5.56, p =.005 respectively], the quality of goals and objectives at Time 1 was a statistically significant predictor of Time 3 scores [model 1: β = .52, t (35) =3.02, p = .006; model 2: β = .37, t (26) =2.16, p = .005. However, after accounting for Time 1 GFS III scores, neither conducting a RBI for developing Time 3 goals and

objectives (coded as 1 = *Yes* and 2 = *No*) nor percentage of time allocated to ECI predicted the quality of goals and objectives at Time 3 (see Table 5).

Table 5. Predictors of the quality of goals and objectives at Time 3

	GFS III at Time 3						
	Model 1			Model 2			
Variable	B	SE	β	B	SE	β	95% CI
Constant	1.68	4.03		6.74	6.05		[-5.78, 19.27]
GFS III Time 1	1.29**	.42	.52**	.93*	.43	.37*	[0.04, 1.81]
% of time allocated to ECI				.04	.04	.20	[-.04, .12]
RBI conducted at Time 3				-3.82	2.23	-.30	[-8.44, 0.80]
R^2 (Adjusted R^2)	.27 (.24)			.42 (.35)			
F	9.13**			5.56**			
ΔR^2				.12			
ΔF				3.03			

*$p < .05$. **$p < .01$.

DISCUSSION

By studying the social validity and follow up effects of a training program designed to improve IEP/IFSP goals and objectives through the RBEI, the present work intends to contribute to effective in-service training for ECI professionals, not only in Portugal and in the Lisbon and Tagus Valley Region (were the study took place), but also in other regions and countries were the RBEI is used. The low quality of IEP/IFSPs' goals and objectives and professional training needs are not necessarily limited to this region or country.

The training program design – based on the RBEI content and structured according to Bransford et al. (2000) key principles on successful adult learning - seems to have been positively viewed by the immediate recipients of this intervention, as the vast majority of the units of meaning were classified as reporting training strengths. Such strengths were related to Training Content (mainly Adequacy to trainees' needs and Specific and Overall Content), Training Methods (mainly Active Learning and Sessions Structure), and Impact on Participants (mainly Triggering Reflection, Acquisition of Knowledge, and View of Practice). Note, however, that about one fourth of the units of meaning reported training weaknesses also related to Training Method and Training

Content. For example, trainees reported feeling the need for extending the training over time while simultaneously decreasing the number of hours per session (Method) and the need for deepening specific and overall content (Content). Although these results seem to support the training's social validity, they also point out areas for future improvement, such as providing (even) more learning opportunities across time, as recommended by Trivette et al., (2009). The last area of Content weaknesses was related to the lack of Adequacy to the trainees' needs or lack of Applicability to the context were they worked. As the training included regular classroom teachers - because according to the Special Education Law (Decree-Law No. 3/2008) they are the IEP coordinator – and some of them never worked with children with disabilities or, if so, delegated IEP coordination to the Special Education Teacher (as required by law, before 2008), training participation requirements and/or teaching methods should be revised in order to increase the training benefits for these particular professionals.

In addition to social validity findings, results also suggest the effectiveness of the training in improving the quality of IEP/IFSPs' goals and objectives at Time 3, that is, in the school year after the training. Even though the quality of goals and objectives decreased significantly from Time 2 (the end of the training) to Time 3 (follow up), it was still a statistically significant improvement from Time 1 (pre-training) to Time 3 (see Boavida, Aguiar, & McWilliam, 2013b). The statistically significant interaction effect between group and time, showing improvements in the quality of goals and objectives from Time 1 to Time 3, suggests we may attribute this effect to the training and not to alternative explanations, such as new guidelines issued by the Ministry of Education or by NSECI.

The association between the quality of IEP/IFSP goals and objectives at Time 3, with RBI variables (RBI implementation mean at Time 2; and using an RBI for developing EIP/IFSP goals and objectives at Time 1 and Time 2 suggests that, as McWilliam (2010a) stated, the process, namely the assessment, that produces goals and objectives is crucial to their quality. These findings are consistent with the ones described by McWilliam et al. (2009). Using the RBI and using it consistently may be a key element to increasing the quality of IEP/IFSP goals and objectives. Unlike Jung and Baird (2003) we did not find any association between professionals experience and the quality of goals or training efficacy. The percentage of time that professionals devoted to ECI in their schedule was also associated with the quality of goals and objectives, which may suggest that the training is less effective for professionals that share their work time with other services, and therefore

work with other conceptual frameworks. Although we could not find other studies that comprised this variable, an effort to look on the influence of variable was made because in Portugal, the NSECI mobilizes community resources and part of them also work in other settings, often based in clinical/remedial perspectives, results seem to endorse Campbell and Halbert (2002) that call up the influence of professionals' values and perspectives on the designed activities to bridge the gap between research and practice. Finally, findings from regression models suggest that, despite these simple associations, the training alone was a statistically significant predictor of the quality of goals and objectives, suggesting once again training efficacy. Although pointing in the same direction of Jung and Baird (2003) previous findings, this training seems to have a greater impact.

Limitations of this study include the high rate of attrition, even though the training was free of charge, its completion awarded teachers one credit, and 72% of the participants completed it successfully (see trainees evaluation criteria in Appendix I). In fact, 60% did not return Time 2 data and the number rose to 85% for Time 3 data. This loss had implications for data analyses, not allowing, for example, for a better understanding of the training efficacy predictors, mediators and moderators, or the analysis of nesting effects associated with the fact that trainees were nested within teams or groups. Furthermore, this loss raises questions about the participants and their reasons not to turn over the requested data: lack of time, lack of commitment, avoidance of assessment, or simply because they chose not to use the method learned. Another limitation is that the study was conducted in a specific region of Portugal and cannot be directly generalized to other populations being, therefore, necessary to continue research in larger and in geographically varied samples. Even so, the results are in line with other research on RBEI training developed in U.S. (William et al., 2009) and in Taiwan (Hwang et al., 2013). Finally, this study does not allow the establishment of a link between the quality of goals and objectives and the quality of intervention, as intervention outcomes were not assessed and we have no guaranties that the professionals addressed the defined goals and objectives. Further research on RBEI effectiveness is required, as the one from Hwang et al. (2013) that shows that, comparing to traditional home visiting, the RBEI is more effective in promoting functional outcomes and reaching family-selected goals and objectives. Despite these limitations, this study had the merit of providing effective training to over 200 professionals, and the data are robust enough to contribute to the empirical evidence on RBEI efficacy, a method that has been increasingly used by ECI across several countries.

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CHAPTER VI

Final Discussion

In Early Childhood Intervention (ECI), effective intervention is crucial to achieve every child developmental and functional full potential. As the early childhood development science rapidly evolved, enabling the change from a model that was child centered and remedial to one that is family-centered and supporter of capacities and functionality, the practices in the field seem not to have followed this trend, with professionals finding themselves trapped between what is known and what they are actually able to do, their beliefs and values. Research has demonstrated this difficulty (e.g., in implementing family-centered: Almeida, 2009; Campbell & Halbert, 2002; Figueiredo, Aguiar, & Pimentel, 2013; McWilliam, Snyder, Harbin, Porter, & Munn, 2000; Pereira, 2009; Pimentel, 2005; Ridgley & Hallam, 2006) and its persistence despite the investment made over the last 20 years in strategies to bring research results into practice. Our ambition with this work was to contribute to the understanding and dissemination of strategies that may allow for the narrowing of the gap between research and practice through in-service training in Routines-Based Early Intervention (RBEI; McWilliam, 2010a).

Individualized Education Programs (IEPs)/Individualized Family Service Plans (IFSPs) goals and objectives constitute the element that ties assessment, planning, and intervention, enabling individualized and effective interventions and contributing to the development of children with disabilities and/or at risk. The quality of goals and objectives can determine or, at the very least, contribute to the effectiveness of interventions. However, previous studies have shown that both IEPs (Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Pretti-Frontczak & Bricker, 2000; Yell & Stecker, 2003) and IFSPs (Bailey, Winton, Rouse, & Turnbull, 1990; Campelo & Nunes, 2008; Jung & Baird, 2003; McWilliam et al., 1998; Valentim, 2006) goals and objectives are poorly written, and present low functionality and measurability, and insufficient focus on natural routines. Despite the hypothesized importance of the quality of intervention goals and objectives, at the onset of our work, research available on Portuguese IFSPs and IEPs was scarce (e.g., Campelo & Nunes, 2008; Valentim, 2006). Thus, though the study presented in Chapter II (Boavida, Aguiar, Pimentel, & McWilliam, 2010) we added previously unavailable information on the quality of Portuguese IEPs' goals and objectives.

Our findings were consistent with studies mentioned above that reported low-quality goals and objectives, when considering criteria such as measurability, functionality, and focus on natural routines, and were reproduced in recent research (Sanches-Ferreira, Lopes-dos-Santos, Alves, Santos, & Silveira-Maia, 2013; Ruble, McGrew, Dalrymple, &

Jung, 2010). Consistent with prior research (Lynch & Beare, 1990) and confirmed in a recent study conducted in Portugal (Sanches-Ferreira et al., 2013), the goals and objectives' indicator of quality that was more frequently observed was related to generalization, which can be related to essentially vague and general outcomes (Yell & Stecker, 2003) sacrificing the necessary specificity, and to the high number of goals and objectives by IEP (also found by Sanches-Ferreira et al., 2013). The low level of measurability and the overall absence of criteria for successful performance - also consistent with prior findings (Fuchs & Shinn, 1989; Lynch & Beare, 1990; Yell & Drasgow, 2000) - further support the possible association between the high number of goals and vague and general outcome statements. Shinn and Shinn (2000) argue that professionals write numerous goals because it is difficult for them to identify the important behaviors to measure and so they focus on satisfying the procedural requirements, which is consistent with our findings. Findings also suggested a positive association between measurability of goals and children's degree of disability, which apparently is contradicted by Sanches-Ferreira et al. (2013) and can probably be explained by differences in study populations, as Sanches-Ferreira and collaborators analyzed IEPs developed for older students (age mean of 10.2 years, ranging from 8 to 18 years). Our findings may result from the teachers' need of more operationalized IEP goals and objectives, because these children might make progress in smaller steps, or may result from a predominance of autonomy goals and objectives, that presented higher quality.

Overall, our findings are consistent with the available research on the quality of IEPs and IFSPs goals and objectives. The reported levels of quality, which may hinder effective interventions and, therefore, children's development, raised awareness regarding the need for professional training, also acknowledged by Sanches-Ferreira et al. (2013). The following three Chapters were dedicated to a training program designed to overcome this need.

Chapter III contributes to the field to the extent that it substantiates and describes in detail, allowing for future replication, an in-service training program specifically designed to improve the quality of IEP/IFSP goals and objectives, while decreasing their excessive number. As the training was effective in achieving both goals, future research should investigate (a) the extent to which early childhood interventionists actually attend to the goals and objectives outlined as well as (b) associated improvements in the support provided to children and families. With this work, we have provided the field with a resource grounded in the Routines-Based Early Intervention (RBEI; McWilliam, 2010b), that has the potential to promote the development of positive relationships with families

(McWilliam, 2010a), and to raise professionals' awareness of the bioecological nature of development (Bronfenbrenner, 1986), by focusing on how the social and physical ecologies affect and are affected by families' interests and abilities. Through its emphasis on routines as the basis for assessment and intervention, this training may increase trainees' effectiveness in responding to cultural and individual-family variations, ensuring the goodness of fit between the demands of routines and the interests of children and their families.

The Routines-Based Interview (RBI; McWilliam, 2005) is a centerpiece of the RBEI and, therefore, was the main focus throughout the training program. The most important tool to teach trainees on the RBI was the RBI Implementation Checklist (Rasmussen & McWilliam, 2010). Therefore, in Chapter IV, we investigated the psychometric properties of the RBI Implementation Checklist. Our findings suggested that the RBI Implementation Checklist' scores were reliable, that this measure was capable of discriminating between people of varying levels of performance, and that it was capable of providing a continuous-variable score of fidelity in the conduction of RBI. Also noteworthy was how items were grouped by difficulty. The easier items (the ones more often demonstrated) were mostly related to affect behaviors, which can probably be explained by natural conversational behaviors inherent to people that choose service careers; the items from the middle level of difficulty included processes and content; and the most difficult items were the ones related to follow-up questions which require a deeper understanding of development and family functioning. Thus, to ensure mastery in conducting the RBI, training could be enhanced through an increased focus on the more difficult items. RBI Checklist evinced to be a good RBI implementation fidelity instrument, by ensuring that key factors are addressed, justifying, not just its importance in training, but also its utility in studying the impact of RBI implementation.

Finally, in Chapter V, we turned once more to training effectiveness and investigated (a) social validity, (b) medium-term outcomes of the training with inclusion of a control condition, (c) and variables that were associated with or explained changes in the quality of goals and objectives. Results seemed to support the training's social validity, as the majority of segments of text from trainees' responses to open-ended questions on training strengths and weaknesses, were classified as reporting strengths related to the content (based on the RBEI) and methods [structured according to Bransford et al. (2000) key principles on adult learning] of the training. Nevertheless, participants responses allowed for the identification of areas for future improvement, such as providing more

learning opportunities across time and revision of training participation requirements and/or teaching methods regarding regular classroom teachers. Results further suggested the effectiveness of the training in improving the quality of EIP/IFSP goals and objectives in the school year after the training and discarded alternative explanations to the effectiveness of the training, such as new guidelines issued by the Ministry of Education or by the National System of Early Childhood Intervention (NSECI), because improvements on the quality scores of goals and objectives from Time 1 to Time 3 were observed only in the group of professionals that participated in the training.

Use of the RBI for developing goals and objectives and RBI implementation fidelity were associated with the quality of IEP/IFSP goals and objectives, which suggests that the process to get to the goals and objectives is crucial to their quality, supporting previous findings (McWilliam, Casey, & Sims, 2009). Another variable associated with the quality of IEP/IFSP goals and objectives was the percentage of time that professionals devoted to ECI, suggesting that the training is less effective for professionals that only work in ECI for part of their working schedule. To the best of our knowledge, there are no other studies that investigated the effects of this particular variable. In Portugal, the National System for Early Childhood Intervention (NSECI) mobilizes resources already available in the community and, therefore, a number of professionals that serve in Local Intervention Teams (LIT) also serve in other community settings (e.g., Special Education, Health Centers that provide clinical therapies, etc.). Since these professionals divide their time between different settings, which sometimes rely on different conceptual frameworks, often based in clinical/remedial perspectives, results seem to endorse Campbell and Halbert (2002) that call up the influence of professionals' values and perspectives to bridge the gap between research and practice. Despite these associations, findings from regression models suggest that the training alone was a statistically significant predictor of the quality of IEP/IFSP goals and objectives, suggesting greater impact than that reported for similar trainings (e.g., Jung & Baird, 2003).

Summarizing, the main goal of this work was to contribute to bridging the gap between research and practice in the ECI field, through applied research. Based on the first study, which produced previously unavailable knowledge on Portuguese early childhood special education services' IEPs, and consistent with previous and subsequent studies that have shown that both IEPs (Goodman & Bond, 1993; Grisham-Brown & Hemmeter, 1998; Pretti-Frontczak & Bricker, 2000; Sanches-Ferreira et al., 2003) and IFSPs (Bailey et

al., 1990; Campelo & Nunes, 2008; Jung & Baird, 2003; McWilliam et al., 1998; Ruble et al., 2010; Valentim, 2006) included low-quality goals and objectives, we developed a training program based on RBEI (McWilliam, 2010a) and structured according to Bransford et al. principles on successful adult learning (2000).

Important lessons were learned. First, a revision or upgrade of the training is needed in order to accommodate for trainees needs for (even) more learning opportunities across time, ensuring increased time for integrating a considerable amount of new knowledge and, thus, further supporting a shift from previous beliefs. Such a revision should also include changes in training participation requirements and/or teaching methods aimed for regular classroom teachers, as they reported feeling farther from ECI models and concepts than the other trainees. Another important lesson relates to the need to promote the adherence to data collection/provision in a more effective way. This training was developed with a doctoral grant and, as gratifying as providing effective training can be, our goal was also to contribute to evidence-based practices as much as we could. The considerable attrition resulted in limitations in data analyses (e.g., training effectiveness predictors, mediators and moderators, analysis of nesting effects, etc.), thus reducing the number of research questions answered. Training that is free of charge and that awards one credit to teachers' is not enough, by itself, to ensure adherence and, in the future, we should consider making the conclusion of the training contingent to provision of data.

Our results contribute to the ECI field to the extent that they corroborate and add new evidence on the effectiveness of in-service training in recommended and evidence-based practices in ECI (e.g., Campbell & Halbert, 2002; Jung & Baird 2003), and specifically in RBEI (e.g., Hwang, Chao, & Liu, 2013; McWilliam, et al., 2009). Our findings provide support for (1) the effectiveness of our training in promoting the quality of EIPs/IFSPs goals and objectives, (2) the central role of the RBI in the process, and (3) the reliability of the RBI Implementation Checklist as a good implementation fidelity instrument.

In conducting this study, we were able to provide this training, which was shown to be effective, to over 200 professionals working in the field, training about 40% of the LITs of the Lisbon and Tagus Valley Region (were about 35% of the Portuguese continental population lives). In considering the trainees' perspectives on the strengths and limitations of the training, we learned that trainees valued, among other training features, the number and different kinds of opportunities to practice the use of the target instruments in an

active way, as well as the promotion of reflection and exchange of ideas, enhancing their changes in the view of practice. These testimonies are coherent with the adult learning principles and with recommendations from Trivette, Dunst, Hamby, and O'Herin (2009) and Dunst and Trivette (2012) and reflect features purposely targeted in designing this training.

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