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Effects of an In-Service Training Program Using the Routines-Based Interview

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Abstract

The focus of this study is an in-service training program rooted in Routines-Based Early Intervention and designed to improve the quality of goals and objectives on individualized plans. Participants were local intervention team members and other professionals who worked closely with each team. This training program involved a small number of trainees per group, providing multiple learning experiences across time, and various opportunities for self-assessment and monitoring. We investigated (a) the perceptions of the participants about the strengths and weaknesses of the training program, (b) medium-term outcomes of the training with a comparison group, (c) and variables associated with the quality of goals and objectives. This study involved training over 200 professionals, and results support the effectiveness of the program in improving the quality of goals and objectives, showing the importance of the Routines-Based Interview in producing that improvement.

Keywords: Professional Training, Routines-Based Interview, Goals, Objectives, IEP, IFSP

Effects of an In-Service Training Program Using the Routines-Based Interview

Recent definitions of early childhood intervention (ECI; e.g., Dunst, 2007) embody practices that are family centered, routines based, and focused on functionality. Despite supporting evidence (e.g., Dunst, Trivette, & Hamby, 2007), research shows these practices are not yet widespread in the ECI 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; Pimentel, 2005).

This consistent finding of incomplete adoption of effective practices might explain the lack of quality found in the goals and objectives on individualized education programs (IEPs) and individualized family service plans (IFSPs). Low quality is most noticeable in levels of specificity, functionality, and a 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; Yell & Stecker, 2003). The following examples illustrate goals and objectives of very low quality found in IEPs and IFSPs (Boavida, Aguiar, McWilliam, & Pimentel, 2010): (1) "enhance communication" , "fine motor development", "direct attention" or "follows a simple command" (vague and general); (2) "reproduce sequences of shapes and items", "buttoning and unbuttoning", "draw vertical lines", "jump on one leg", "stack 10 cubes" (lack of functionality).

IEPs and IFSPs are considered essential mechanisms to guide early childhood special education (ECSE) and ECI, respectively, because they establish individualized goals and include methods for monitoring them. These goals and methods set up the conditions needed for children with disabilities to acquire important developmental skills (Wolery, 2000). Goals and objectives are, however, only as functional as the assessment that produces them

(McWilliam, 2010a); so, if higher-quality goals and objectives are wanted, professionals need

to integrate family centeredness and functional premises in the assessment of needs. Training

tailored towards these professional skills is therefore needed (Boavida, Aguiar, McWilliam,

& Pimentel, 2010; Sanches-Ferreira et al., 2013).

To train professionals effectively, adult learning principles should be considered: (1)

recognition 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). Based on Bransford et al.'s

findings, Trivette, Dunst, Hamby, and O'Herin (2009) synthesized the research on the

effectiveness of adult-learning methods and concluded that (a) learning methods and

practices that had the most positive results were those that more actively involved learners in

all aspects of training experiences (planning, application, and reflection and mastery); (b) the

more adult learning characteristics were incorporated in the training, the greater the learner

outcomes achieved; (c) the most effective trainings were those using evidence-based methods

with a small group of participants, across multiple occasions, lasting more than 10 hours, and

including frequent self-assessment by and monitoring of trainees.

The way professionals are trained is a major factor for success, but it is not the only

one; the content and practices taught are as important. An approach starting to show positive

effects in improving the quality of goals and objectives (Boavida, Aguiar, & McWilliam,

2014; 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 model (RBEI; McWilliam, 2010a). 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. One component of RBEI is the

Routines-Based Interview (RBI; McWilliam, 2005, 2010b), from which professionals can write functional goals and objectives chosen by the family (McWilliam).

In RBEI, to make the shift from child-focused assessment and intervention (Almeida, 2009; Campbell & Sawyer, 2007; Pimentel, 2005) to family centeredness, professionals are trained to interview families using the RBI. The RBI is a central feature of RBEI because it establishes both the relationship with the family and the focus of the intervention, giving the family a central, active, and decision-making role from the very beginning. The RBI is a semistructured interview, taking 2 hours, which includes specific procedures for eliciting rich and thick descriptions of child and family functioning in everyday routines. To conduct a successful RBI, interviewers must follow a protocol and use specific interviewing behaviors such as active listening, empathizing, asking in-depth follow-up questions, continuing the conversation, seeking evaluative and interpretative opinions, and managing time (McWilliam, 2010a, 2010b). Professionals are trained in the RBI structure and specific interviewing behaviors with the RBI Implementation Checklist (McWilliam, 2010b). A well-conducted RBI allows interviewers to (a) learn much about everyday functioning of the child and his or her family members, (b) establish a positive relationship with the family, and (c) help the family produce a substantive, functional list of outcomes/goals, addressing both child- and family-level needs. Goals are a central piece of the RBEI because they are the result of a well-conducted RBI and because the way they are obtained sets the stage for high-quality intervention.

Researchers have described criteria for high-quality IFSP goals (Bailey at al., 1998; Jung & McWilliam, 2005; McWilliam, 2010a; McWilliam et al., 1998): They (a) are appropriate for the context, supporting natural caregivers' routines and reflecting real-life situations; (b) reflect family priorities; (c) address meaningful skills necessary or useful for the child's participation in family, classroom, and community routines; (d) are free of jargon;

and (e) are specific and measurable, with meaningful criteria for generalization and timeliness. The following examples illustrate goals and objectives of high quality found in IEPs and IFSPs: "Paxton will participate in meals at home and at the daycare eating cereals, soup, and yogurt with a spoon. We will know he can do this when he eats a bowl of one of the these foods with no help, once at home and once at the day care in one day for three consecutive days"; "John will participate in dressing time, bath time and bedtime, by helping to dress himself. We will know he can do this when he lifts his arms to put on shirts and sweaters and sticks his legs in the pants or shorts in two of the above-mentioned routines in one day for five consecutive days"; "Lynda will participate in going to school, going to the bathroom at school, and outside play by walking with her walker. We will know she can do this when she walks 10 yards with her walker twice a day on three of five days."

In conclusion, ECI practices should be family-centered, routines based, and focused on functionality (McWilliam, 2010c), but these practices are not widespread. The literature highlights the need to focus assessment and intervention on the family (Dunst, Bruder, & Espe-Scherwindt, 2014) and to establish high-quality goals as precursors and regulators of human action (Ruble & McGrew, 2013). The exact impact of training professionals to conduct an RBI on the quality of the resulting goals, however, has not yet been established. That is the purpose of this study.

The focus of our study is a multi-component training package that for brevity reasons we refer to, in this paper, as a training program. This training program is rooted in RBEI and incorporates the adult-learning principles mentioned previously. Table 1 summarizes the features of the training program, providing an overview of the number of sessions, the content addressed in each session, and the methods used to facilitate learning. A full description of this 25-hour training as well as short-term, posttraining results on the quality

improvement of IFSP/IEP goals and objectives are available in Boavida, Aguiar, and McWilliam (2014).

Method

Participants

Participants were recruited through an invitation to the Lisbon and Tagus Valley Subcommittee of the Portuguese National System of Early Childhood Intervention, one of the five national subcommittees created with Decree-Law No. 281/2009, which established the National System of Early Childhood Intervention. After approval from the Portuguese Data Protection Authority, all 35 local intervention teams (LIT) in the area were invited to participate in a 25-hour training program on how to write high-quality IFSP/IEP goals and objectives by using the RBI. The invitation was addressed to team members and to other professionals working closely with each team, such as child care and education teachers responsible for inclusive classrooms attended by children served by LITs, professionals of services working closely with the teams, and special education teachers working in the same area. The 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), awarding one credit to each participating teacher. To obtain the credit, teachers had to score at least five points on a ten point scale, with 40% of the score requiring minimum attendance and participation and 60% requiring submission of assignments during the 3 months of follow-up, including conducting an RBI and writing functional goals. Throughout this report, Time 1 corresponds to pre-training data, Time 2 refers to data collected within 3 months of completing the training, and Time 3 corresponds to data collected 1 year after Time 2. At each time, one IEP/IFSP was requested from each participant.

In this naturalistic (i.e., non-experimental) study of training effects, the first 14 LITs to accept the invitation to participate were trained. The remaining 10 LITs that agreed to participate were allocated to the comparison group. Training was provided in small groups of 12 to 25 professionals, with considerable diversity in group composition: four groups consisted of only LIT members, three groups included mostly (58%-77%) LIT members, and in the remaining seven groups less than half of participants were LIT members, with a varying number of professionals working in public or private early childhood education and ECI services. All the participants in the comparison group were LIT members.

In this study, 224 professionals provided data for the qualitative analysis, and 71 professionals provided data for the quantitative analysis. Table 2 provides information on participants' characteristics, considering: (a) training group participants who completed the training and responded to the Questionnaire on Training Strengths and Weaknesses ($N =$ 224); (b) training group participants who provided Time 1 and Time 3 data ($N = 36$); and (c) professionals assigned to the comparison group and who also provided Time 1 and Time 3 data ($N = 35$). All participants signed an informed-consent form to take part in this study.

Although only 11 professionals dropped out the training, a high attrition occurred owing to missing data: Thirty-four percent of the professionals did not provide Time 1 data; 63% did not provide Time 2 data, and 85% did not provide Time 3 data. Only 14% of all professionals (and 21% of participating ELI members) provided Time 1 and Time 3 data. Regarding the comparison group, 60% of the professionals provided Time 1 and Time 3 data. Overall, professionals had a mean of 17 years of education ($SD = 1.58$), 15 years of working experience ($SD = 9.04$), and 4 years of experience in the field of early childhood intervention ($SD = 4.88$).

Measures and Procedures

      Demographics form. Participants completed a demographics form that included questions related to sex, age, education, occupation, place of work, and experience in ECI and ECSE.

      Fidelity of training sessions. To assess the fidelity of the training, at the end of each session, each participant anonymously completed a questionnaire specific to that session. Participants rated (1) the achievement of the goals for the session (3 or 4 goals, depending on the session) on a 4-point Likert-type scale (*insufficient*, *average*, *good*, or *excellent*) and (2) the perceived session fidelity by reporting (yes or no) if each item on the session plan was carried out (6-11 items, depending on the session).

      The number of respondents providing data on the fidelity of implementation varied between 214 and 257 in the different sessions. Their perception of the achievement of the goals of the session ranged from a mean of 3.27 and 3.63 ($SD = 0.47$-0.51), except in Session 3 ($M = 3.66$, $SD = 2.08$), and the perceived session fidelity (i.e., percentage of planned activities carried out) ranged from a mean of 86% to 98% ($SD = 9.16$-21.50), except for Session 3 ($M = 68\%$, $SD = 16.92$). Session 3 was the middle session and, originally, a role play of the RBI and another task regarding the use of the Measure of Engagement, Independence, and Social Relationships (MEISR; McWilliam & Hornstein, 2007) and the writing of a functionality profile were planned. After the first few trainings, however, it was obvious that the second part of the plan had to be conducted in Session 4 (see Table 1), but the questionnaire remained the same, resulting in the low fidelity score.

      Qualitative data on training strengths and weaknesses. To analyze participants' perceptions of the strengths and limitations of the training, we conducted a content analysis of their responses to the question "This week you are asked to reflect on the strengths and weaknesses of the training." Participants' open-ended answers were segmented into units of

meaning. After reading the data, a set of categories and subcategories, along with inclusion and exclusion criteria, was 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, 1,444 units of meaning were coded, using a coding scheme of 10 categories and 42 subcategories. Intercoder agreement was computed and, at the subcategory level, mean percent agreement was 98.84 and mean kappa was .70.

Quality of IFSP/IEP goals and objectives. To evaluate the quality of IFSP/IEP goals and objectives, we used the Goal Functionality Scale III (GFS III; McWilliam, 2009), which consists of seven items for each goal: (a) emphasis on 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 on each of these items on a scale of 1-4: *not at all*, *somewhat*, *much*, or *very much*. 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 (minimum = 7, maximum = 28). In a previous study (Boavida, Aguiar, McWilliam, & Pimentel, 2010), with over 3,000 goals and objectives from 83 IEPs written by 32 special education teachers, GFS III scores and the Goals and Objectives Rating Instrument (Notari, 1988) were correlated, showing construct validity for GFS III scores.

In the current study, 3,939 goals from 306 IFSP/IEPs were scored using GFS III. Within every IFSP/IEP, all goals were first scored on Item 1, then all goals were scored on Item 2, and so forth. Two trained researchers rated the goals, with one rating all of the IFSP/IEPs and the other one rating 20% of them, unaware of the condition (i.e., Time and Group) under which each IFSP/IEP was produced. Mean exact agreement across all items

was 78.98%, with a mean weighted kappa of .59 and an intraclass correlation coefficient of

.71. Because Cronbach's alpha coefficient for the total score, across all seven items was .93,

the GFS III overall mean score, computed as the mean of scores across all goals of an

IFSP/IEP, was used. The mean was necessary because each plan could have a different

number of goals.

RBI implementation. During the 3 months of fieldwork, participants were asked to

conduct and video record an RBI. We evaluated the quality of these RBIs with the RBI

Implementation Checklist (McWilliam, 2010b) and sent written feedback to each participant.

The RBI Implementation Checklist is a 36-item instrument designed to assess the fidelity

with which the RBI is implemented, considering both the RBI structure and interviewing

behaviors. Each item was rated on a 3-point scale: (1) *not observed*, (2) *observed at times but*

not consistently, and (3) *observed*. Results of a Rasch analysis of RBI Implementation

Checklist scores for the 120 complete videos submitted by participants indicated that the

measure was able to discriminate between people of varying levels of performance (see

Boavida, Akers, McWilliam, & Jung,, 2015).

In this study, because the internal consistency of the RBI Implementation Checklist

scores was .86, the mean across items was calculated. Two trained researchers rated the

videos, with one rating all the RBI videos and the other one rating 31% of them. Mean exact

agreement on each item was 78.6%, and the intraclass correlation coefficient between the two

sets of scores was .81. Feedback consisted of an initial positive statement about the RBI in

the video, the identification of three or four good interviewing behaviors, incorrect steps,

missed steps, and a final positive statement.

Data Analyses

Data on participants' perceptions of the strengths and weaknesses of the training were

examined through content analysis. Spearman rank order correlation coefficients were

computed to investigate the associations among the quality of IEP/IFSP goals and objectives, selected professional characteristics from the demographics form, use of the RBI, and fidelity of implementation, among the professionals completing the training. A mixed-design (both between- and within-subjects) analysis of variance was conducted to assess change over time in GFS III scores in the training and in the comparison groups, so that alternative explanations for improvement in the quality of goals and objectives could be eliminated.

Five Mann-Whitney U tests were conducted (a) to test for differences in the quality of goals (GFS III), between training and comparison groups; (b) to test for differences *within* the training group, between participants that conducted an RBI at Time 3 and participants that did not conduct an RBI at Time 3; (c) to test for differences *within* the comparison group, between participants that conducted an RBI at Time 3 and participants that did not conduct an RBI at Time 3; (d) to test for differences *within* participants that conducted an RBI at Time 3, between training and comparison group; and (e) to test for differences *within* participants that did not conduct an RBI at Time 3, between training and comparison group. Cohen's *d* was computed for estimating the effect size of such differences.

Considering the high attrition rate, we decided to determine if any differences between professionals providing some data and those providing no data existed. We divided participants into three groups: (1) participants providing no data at Time 1 (34%); (2) participants that provided data at Time 1 but did not provide data at Time 3 (52%); and (3) participants providing data at Time 1 and Time 3 (14%). We conducted an Independent-Samples Kruskal-Wallis Test to test for group differences as a function of professionals' age, years of education, and years of experience. We also computed Pearson chi-square to test for differences as a function of order/timing of training and group composition.

Results

Participants' Perceptions of the Strengths and Weaknesses of the Training

Participants' perceptions of the strengths and weaknesses of the training are displayed in Tables 3 and 4. From 1,440 units of meaning analyzed, 1,072 (74.2%) were about strengths and 373 (25.8%) were about weaknesses. The most frequent category on training strengths focused on its impact, namely on participants' reflection (the most frequent subcategory). Conversely, the most frequent category related to training weaknesses focused on the content (i.e., amount of detail and applicability); the most frequent subcategory, however, was related to the number and duration of training sessions, with participants suggesting the need for shorter sessions over an extended period.The displayed categories represent 80% of the total number of units of meaning analyzed.

Variables Associated With the Quality of Goals and Objectives

Those participants who wrote better goals during baseline tended to write better goals after training, but conducting an RBI made a positive difference. So did working exclusively in early childhood. We found moderate associations between the quality of goals and objectives at Time 1 and the quality of goals and objectives at Time 3 (Table 5). The quality of goals and objectives was associated with conducting an RBI. Time 3 goal quality was predicted also by the quality of the RBI at Time 2. The percentage of time allocated to ECI in the participants' working schedule was also positively associated with the quality of goals and objectives at Time 3, with participants devoting more time to ECI developing higher quality goals and objectives. Participants' age, years of working experience, and years of experience in ECI were not associated with goal functionality.

Improvement in the Quality of IFSP/IEP Goals and Objectives

Training made a difference in the quality of goals. A mixed-design analysis of variance revealed a large and statistically significant Group (intervention versus comparison) x Time interaction effect, $F(1, 69) = 24.22$, $p < .001$, $\acute{\eta}^2 = .26$, with the training group alone showing improvement in the quality of goals and objectives over time ($d = 1.66$) (see descriptive statistics in Table 6). We found no statistically significant differences in GFS III scores between the training and comparison groups at Time 1, $U = 476500$, $p = .074$, $d = 0.45$.

In the Group x Time analysis, we found noteworthy statistically significant differences in GFS III scores, at Time 3, between the training and the comparison groups within the participants who completed an RBI at Time 3, $U = 34000$, $p = .047$, $d = 3.03$. A large statistically significant difference was found also between professionals completing an RBI at Time 3 versus professionals not completing an RBI at Time 3, for the Training Group, $U = 65000$, $p = .016$, $d = 2.39$ (see Table 7). We found a small standardized difference in GFS III scores between the training and comparison groups within the participants who did not complete an RBI at Time 3, $U = 132500$, $p = .86$, $d = 0.41$. Improvement in GFS III scores was greater for participants receiving the training and completing an RBI as a basis for writing IFSP/IEP goals and objectives.

Attrition

The training involved a long-term commitment from participants who were used to short in-service training workshops, often meeting just once. Furthermore, traditional in-service workshops do not require assignments to be completed, especially assignments related to actual performance. In the course of this training, attrition was considerable.

We did not find any statistically significant differences among professionals who did not provide Time 1 data, professionals who provided Time 1 data but did not provide Time 3

data, and professionals who provided Time 1 and Time 3 data, as a function of age, years of education, or years of experience. However, participating groups of professionals differed in the amount of data contributed as a function of order/timing of training, $\chi^2(2, N = 273) = 18.11$, $p < .001$, group composition, $\chi^2(4, N = 273) = 31.28$, $p < .001$, occupation, $\chi^2(12, N = 273) = 56.89$, $p < .001$, and work place $\chi^2(4, N=273) = 61.68$, $p < .001$ (see Table 8).

Discussion

The present work contributes to our knowledge about effective in-service training for ECI professionals, not only in Portugal and in the Lisbon and Tagus Valley Region (where the study took place), but also in other regions and countries where RBEI is used. The pre-training low quality of goals and objectives and the need for professional training are not necessarily limited to this region or country.

The association between (a) the quality of IFSP/IEP goals and objectives at Time 3 and (b) use and quality of the RBI suggests that this method of needs assessment that produces goals and objectives is associated with the quality of the plan (McWilliam, 2010a). These findings are consistent with those described by McWilliam et al. (2009). Using the RBI and using it consistently may be a key element to increasing the quality of IFSP/IEP goals and objectives.

Regarding participant characteristics, unlike Jung and Baird (2003), we did not find any association between professionals' experience and the quality of goals, which might be related to American versus Portuguese professionals' experience. The percentage of time that professionals devoted to ECI in their schedule, however, was associated with the quality of goals and objectives both at Time 1 and Time 3. Although we could not find other studies of goal quality that included this variable, we examined the percentage of time devoted to ECI because, in Portugal, some ECI professionals also work in other settings having different philosophies. Furthermore, these findings seem to be congruent with results from McWilliam

et al. (1998), which found that IFSPs written by professionals working in home-based ECI

services were of better quality, reflecting more family centeredness and functionality, than

those written by professionals working in health departments or in classroom-based

programs.

Results also provide some support for the effectiveness of the training in improving

the quality of IFSP/IEP 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

to Time 3 (see Boavida, Aguiar, & McWilliam,, 2013), it was still a statistically significant

improvement from Time 1 to Time 3. The statistically significant interaction effect between

Group Type (intervention or comparison) and Time (Time 1 and Time 3), showing large

improvements in the quality of goals and objectives from Time 1 to Time 3 only in the

Intervention Group, suggests we can attribute this improvement to the training. Furthermore,

conducting an RBI resulted in improvement of GFS III scores in the intervention group and

in a decrease of GFS III scores in the control group. This finding also suggests the need for

training in the RBI, if improvement in the functionality of goals and objectives is desired.

The training program design, based on the RBEI content and structured according to

Bransford et al.'s (2000) key principles of successful adult learning, was positively viewed by

the recipients of this intervention. Participants reported strengths in the training content,

training methods, and impact on participants. About one fourth of the comments on training

weaknesses, however, were also related to the training method and content. For example,

trainees reported feeling the need to extend the training over time and to decrease the number

of hours per session. They also said they needed more in-depth specific and overall content.

Although these results seem to suggest participants' overall satisfaction with the training,

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

weakness was related to the training not being applicable to participants' needs or work

contexts, which could have come from regular classroom teachers, some of whom had never

worked with children with disabilities or had delegated IEP coordination to the special

education teacher, as the law before 2008 required. Nevertheless, according to the current

Special Education Law (Decree-Law No. 3/2008), classroom teachers are the IEP

coordinators. Future training should be revised to increase the training benefits for these

professionals. The fact that none of the regular education teachers delivered both Time 1 and

Time 3 data seems to support the conclusion that those were the professionals perceiving the

training to be least applicable.

Limitations

The positive results found in this study are restricted by the level of attrition that

occurred, even though the training was free of charge and completion resulted in teachers'

receiving one credit. Although attrition happens in training, this loss had implications for data

analyses, preventing a better understanding of the training effectiveness predictors,

mediators, and moderators, or the analysis of the effects of trainees nesting within teams or

groups (see Boavida, Aguiar, & McWilliam, 2014). Furthermore, this level of attrition raises

questions about the participants' potential reasons for not turning in the requested data,

including lack of time, lack of commitment, avoidance of assessment, or simply because they

chose not to use the method learned. Whatever the reasons, the responders (i.e., those who

completed the program and turned in videos) were likely to be the most motivated

participants, so these data might represent higher than average effects for such a training

program in the Lisbon area. Another limitation is that the study was conducted in a specific

region of Portugal and cannot be directly generalized to other places. Even so, the results are

in line with other research on RBEI training developed in the U.S. (McWilliam 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 guarantees that the professionals addressed the defined goals and objectives. Further research on RBEI effectiveness is required, such as the replication of this study, with a better plan for preventing attrition.

Implications for practice and future research

Early intervention professionals can learn to write more functional and family-centered goals. This study has shown that a multi-session training program incorporating instruction on the RBI is a promising professional development practice. When the RBI is used, goals are of higher quality, meaning they are more functional and have better measurement criteria. Some participants are better responders than others, with nonresponders dropping out either because they are not responsible for IFSP/IEP development or they do not want to complete the follow-up activities, including assignments such as a videotaped RBI with a family. Replications would need to be clear with participants, at enrollment, about the expectations.

Because the RBI is the path to high-quality goals, incorporating training on this practice, especially as part of job-embedded professional development is recommended. From a management and policy perspective, a requirement to conduct an RBI is a potential avenue to achieving high-quality goals.

Finally, the most promising directions for research might be in implementation science, to see what factors benefit or hinder the application of the RBI and the writing of participation-based goals. This study shows that training is indeed one of these "drivers", but other drivers related to competence, organization, and leadership might be identified. Ultimately, the field should have guidance about how professionals can implement practices for functional, family-centered needs assessment (i.e., the RBI) and for writing meaningful (i.e., participation-based) goals.

References

Almeida, I. C. (2009). *Estudos sobre a intervenção precoce em Portugal: Ideias dos especialistas, dos profissionais e das famílias* [Studies of early intervention in Portugal: Ideas of specialists, professionals, and families]. Lisbon, Portugal: Instituto Nacional para a Reabilitação.

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, 233–243. doi:10.1097/IYC.0b013e3181e45925

Boavida, T., Aguiar, C., & McWilliam, R. A. (2013, July). Increasing the quality of intervention goals and objectives: Outcomes of a training program. Paper presentation at the International Society on Early Intervention Regional Conference, St. Petersburg, Russian Federation.

Boavida, T., Aguiar, C., & McWilliam, R. A. (2014). A training program on the quality of IFSP/IEP goals and objectives through RBI. Topics in Early Childhood Special Education, 33, 200-211. doi: 10.1177/0271121413494416

Boavida, T., Akers, K., McWilliam, R. A., & Jung, L. A. (2015). Rasch analysis of the Routines-Based Interview Implementation Checklist. Infants and Young Children, 28(3), 237-247. doi: 10.1097/IYC.0000000000000041

Bailey, D. B., Jr., McWilliam, R. A., Darkes, L. A., Hebbler, K., Simeonsson, R. J., Spiker, D., & Wagner, M. (1998). Family outcomes in early intervention: A framework for program evaluation and efficacy research. *Exceptional Children*, *64*, 313-328. doi: 10.1177/001440299806400302

Bailey, D. B., Jr., Winton, P. J., Rouse, L., & Turnbull, A. P. (1990). Family goals in infant intervention: Analysis and issues. *Journal of Early Intervention, 14*, 15-26. doi: 10.1177/105381519001400102

Bransford, J. D., Brown, A. L., Cocking, R. R., Donovan, M. S. Bransford, J. D., &

    Pellegrino, J. W. (Eds.). (2000). *How people learn: Brain, mind, experience, and*

    school. Washington, DC: National Academy Press.

Campbell, P. H., & Halbert, J. (2002). Between research and practice: Provider perspectives

    on early intervention. *Topics in Early Childhood Special Education, 22*, 211-224. doi:

    10.1177/027112140202200403

Campbell, P. H., & Sawyer, L. B. (2007). Supporting learning opportunities in natural

    settings through participation-based services. *Journal of Early Intervention, 29*, 287-

    305. doi: 10.1177/105381510702900402

Campelo, L. F., & Nunes, C. (2008). A avaliação das práticas centradas na família através

    dos planos individualizados de apoio à família [The assessment of family-centered

    practices through individualized family service plans]. *International Journal of*

    Developmental and Educational Psychology, XX, 1, 55-62.

Decree-Law No. 3/2008 [Decreto-Lei n.◦ 3/2008]. Ministério da Educação. Diário da

    República, Série n.◦ 4 – 7 de Janeiro de 2008, pp. 154–164.

Decree-Law No. 281/2009 [Decreto-Lei n.◦ 281/2009]. Diário da República, Série n.◦ 193 – 6

    de Outubro de 2009, pp. 7298–7301.

Dunst, C. J. (2007). Early intervention for infants and toddlers with developmental

    disabilities. In S. L. Odom, R. H. Horner, M. Snell, & J. Black (Eds.), *Handbook of*

    developmental disabilities (pp. 161-180). New York, NY: Guilford Press.

Dunst, C. J., Bruder, M. B., & Espe-Sherwindt, M. (2014). Family capacity-building in early

    childhood intervention: Do context and setting matter? *School Community Journal,*

    24, 37-48.

Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2007). Meta-analysis of family-centered

helpgiving practices research. *Mental Retardation and Developmental Disabilities*

Research Reviews, *13*, 370-378. doi: 10.1002/mrdd.20176

Goodman, J., & Bond, L. (1993). The individualized education program: A retrospective

critique. *Journal of Special Education*, *26*, 408-422. doi:

10.1177/002246699302600405

Grisham-Brown, J. F., & Hemmeter, M. L. (1998). Writing IEP goals and objectives:

Reflecting an activity-based approach to instruction for young children with

disabilities. *Young Exceptional Children, 1*(3), 2-10. doi:

10.1177/109625069800100301

Hwang, A. W., Chao, M. Y., & Liu, S. W. (2013). A randomized controlled trial of routines-

based early intervention for children with or at risk for developmental delay. *Research*

in Developmental Disabilities, 34, 3112-3121. doi: 10.1016/j.ridd.2013.06.037

Jung, L. A., & Baird, S. M. (2003). Effects of service coordinator variables on individualized

family service plan. *Journal of Early Intervention, 25*, 206-218. doi:

10.1177/105381510302500305

Jung, L. A., & McWilliam, R. A. (2005). Reliability and validity of scores on the IFSP Rating

Scale. *Journal of Early Intervention*, *27*, 125-136. doi: 10.1177/105381510502700207

McWilliam, R. A. (2005). Assessing the resource needs of families in the context of early

intervention. In M. J. Guralnick (Ed.)*, A developmental systems approach to early*

intervention (pp. 215-234). Baltimore, MD: Paul H. Brookes.

McWilliam, R. A. (2009). *Goal Functionality Scale III*. Chattanooga, TN: TEIDS-Plus Study.

Siskin Children's Institute.

McWilliam, R. A. (2010a). Routines-based early intervention: Strategies for supporting

young children with disabilities. Baltimore, MD: Brookes Publishing.

McWilliam, R. A. (2010b). RBI implementation checklist. In R. A. McWilliam (Ed.),

  Working with families of young children with special needs (pp. 44-47). New York,

  NY: Guilford Press.

McWilliam, R. A. (Ed.). (2010c). *Working with families of young children with special needs*.

  New York, NY: Guilford Press.

McWilliam, R. A., Casey, A. M., & Sims, J. (2009). The routines-based interview: A method

  for gathering information and assessing needs. *Infants and Young Children, 22,* 201-

  210. doi: 10.1097/IYC.0b013e3181abe1dd

McWilliam, R. A., Ferguson, A., Harbin, G. L., Porter, P., Munn, D., & Vandiviere, P.

  (1998). The family-centeredness of individualized family service plans. *Topics in*

  Early Childhood Special Education, *18*, 69-82. doi: 10.1177/027112149801800203

McWilliam, R. A., & Hornstein, S. (2007). *Measure of Engagement, Independence, and*

  Social Relationships (MEISR). Nashville, TN: Vanderbilt University.

Notari, A. R. (1988). The utility of a criterion-reference instrument in the development of the

  individualized education plan goals for infants and young children. Unpublished

  doctoral dissertation, University of Oregon, Eugene, Oregon.

Pimentel, J. (2005). *Intervenção focada na família: Desejo ou realidade* [Family-focused

  intervention: Wish or reality]. Lisbon, Portugal: Secretariado Nacional para a

  Reabilitação e Integração das Pessoas com Deficiência.

Pretti-Frontczak, K., & Bricker, D. (2000). Enhancing the quality of Individualized Education

  Plan (IEP) goals and objectives. *Journal of Early Intervention, 23*, 92-105. doi:

  10.1177/105381510002300204

Ruble, L., & McGrew, J. H. (2013). Teacher and child predictors of achieving IEP goals of

  children with autism. *Journal of Autism and Developmental Disorders, 43,* 2748-

  2763. doi: 10.1007/s10803-013-1884-x

Sanches-Ferreira, M., Lopes-dos-Santos, P., Alves, S., Santos, M., & Silveira-Maia, M.

(2013). How individualised are the individualised education programmes (IEPs): An

analysis of the contents and quality of the IEP goals. *European Journal of Special

Needs Education, 28,* 507-520. doi: 10.1080/08856257.2013.830435

Trivette, C. M., Dunst, C. J., Hamby, D. W., & O'Herin, C. E. (2009). Characteristics and

consequences of adult learning methods and strategies. *Practical Evaluations Reports,

2*, 1-32. Retrieved from http://tnt.asu.edu/sites/default/files/AdultLearning_rev7-04-

09.pdf.

Wolery, M. (2000). Recommended practices in child-focused interventions. In S. Sandall, M.

E. McLean, & B. J. Smith (Eds.), *DEC recommended practices in early intervention

/early childhood special education* (pp. 29-37). Longmont, CO: Sopris West.

World Health Organization. (2007). International Classification of Functioning, Disability

and Health: Children and Youth. Geneva: Author.

Yell, M. L., & Stecker, P. M. (2003). Developing legally correct and educational meaningful

IEPs using curriculum-based measurement. *Assessment for Effective Intervention*, *28*,

73-88. doi: 10.1177/073724770302800308

Table 1

Training Contents and Features

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

Note. RBI = Routines-Based Interview; MEISR = Measure of Engagement, Independence, and Social Relationships (McWilliam &

Hornstein, 2007); ICF-CY = International Classification of Functioning, Disability, and Health−Children and Youth (World Health

Organization, 2007); RBEI = Routines-Based Early Intervention.

Table 2

Participant Characteristics

	Training Group						Comparison Group		
	Reported on Training Weaknesses and Strengths			Subset With Data From T1 and T3			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	%		*N*	%		*N*	%	
Sex (Female)	208	96.7		36	100		33	94.3	
Occupation									
SE Teacher	31	14.0		8	22.2		-	-	
ECI Teacher	47	21.2		9	25.0		17	48.6	
ECE Teacher	66	29.7		-	-		-	-	
Therapist	40	18.0		12	33.3		9	25.7	
Psychologist	18	8.1		5	13.9		5	14.3	
Social Worker	12	5.4		2	5.6		3	8.6	
Other	8	3.6		-	-		1	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. T1 = Time 1; T3 = Time 3; SE = Special Education; ECI = Early Childhood Intervention; ECE = Early Childhood Education; LIT = Local Intervention Team; RBI = Routines-Based Interview.

Table 3

Results from Content Analysis: Most Frequent Categories and Subcategories on Training 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 an 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".
			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".

Note. RBI = Routines-Based Interview; MEISR = Measure of Engagement, Independence, and Social Relationships.

Table 4

Results from Content Analysis: Most Frequent Categories and Subcategories on Training 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".
			Insufficient detail (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"

Note. RBI = Routines-Based Interview; LIT = Local Intervention Team; ICF = International Classification of Functioning, Disability, and Health.

Table 5

Spearman's Rank Order Correlation Coefficients Among Study Variables (N = 27 - 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 (No = 1, Yes = 2)	.44**	.59**	.35	-					
5. RBI conducted at Time 3 (No = 1, Yes = 2)	.41**	.23	.21	.26	-				
6. Prior training in RBI (No = 1, Yes = 2)	.26	.26	-.06	.45**	.06	-			
7. % of time allocated to ECI	.44**	.42*	.41*	.39*	.35	.13	-		
8. Age	-.08	-.20	-.18	-.38*	-.14	.04	.13	-	
9. Years of service	-.02	-.24	-.16	-.38*	-.23	.11	.15	.94**	-
10. Experience in ECI (years)	.07	.11	.12	.05	.15	.17	.10	.34*	.26

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

Note. GFS III = Goal Functionality Scale III; RBI = Routines-Based Interview; ECI = Early Childhood Intervention.

Table 6

GFS III Scores for Time 1 and Time 3 Across Groups

Group Type	Time 1			Time 3		
	n	*M*	*SD*	*n*	*M*	*SD*
Training Group GFS III Scores	36	9.12	2.46	36	13.46	6.14
Comparison Group GFS III Scores	35	7.95	1.06	35	7.83	0.78

Note. GFS III = Goal Functionality Scale III.

Table 7

GFS III Scores at Time 3 by Group Type and Completion (or not) of an RBI at Time 3

	Completion of an RBI at Time 3			Without Completion of an RBI at Time 3		
	n	*M*	*SD*	*n*	*M*	*SD*
Training Group GFS III Scores at Time 3	24	15.47	6.27	11	9.06	3.21
Comparison Group GFS III Scores at Time 3	6	7.36	0.42	25	7.99	0.82

Note. GFS III = Goal Functionality Scale III; RBI = Routines-Based Interview.

Table 8

Comparison of participation rates within group and participants' characteristics

	No Time 1 data		Time 1 data, but no Time 3 data		Time 1 and Time 3 data	
	N	%	*N*	%	*N*	%
Starting month						
January-February	42	34.4	52	42.6	28	23.0
March-April	52	34.4	90	59.6	9	6.0
Group composition						
100 % LIT	11	19.0	33	56.9	14	24.1
58-77% LIT	12	19.0	37	58.7	14	22.2
< 50% LIT	71	46.7	72	47.4	9	5.9
Occupation						
SE Teacher	7	20.0	20	57.1	8	22.9
ECI Teacher	6	11.5	37	71.2	9	17.3
ECE Teacher	49	55.1	40	44.9	0	0.0
Therapist	9	20.5	23	52.3	12	27.3
Psychologist	7	33.3	9	42.9	5	23.8
Social Worker	8	42.1	8	42.1	3	15.8
Other	8	61.5	5	38.5	0	0.0
Work setting						
LIT	26	19.1	80	58.8	30	22.1
Public school	13	24.1	34	63.0	7	13.0
Other	55	66.3	28	33.7	0	0.0
Total	94	34.4	142	52.0	37	13.6

Note. LIT = Local Intervention Team; SE = Special Education; ECI = Early Intervention; ECE = Early Childhood Education.

| 35 LIT from LTVSNSECI invited to participate | Attrition |

24 LIT accepted

Enrollment refusal
2 LIT refused
9 LIT never responded

Last 10 LIT allocated to comparison group

First 14 LIT allocated to training group

Attrition during intervention
11 professionals dropped out

58 LIT members

273 professionals: 136 LIT members and 137 external ECI/ECSE

Attrition due to missing data
Training Group
 Time 1 data (from these):
 - 94 did not provide Time 1 data OR provided Time 1 data without child level goals (34%)
 - 81 only provided Time 1 data (30%)
 Time 2 data:
 - 164 did not provide Time 2 data or provided Time 2 data without child level goals (63%)
 Time 3 data (follow-up attrition):
 - 232 did not provide Time 3 data (85%) (196 with no justification; 24 without cases; 5 unemployed)
Comparison Group
 - 23 professionals did not return Time 1 or Time 3 data OR never wrote an IFSP or EIP (40%)

204 completed the training successfully 69 professionals did not accomplished the minimum requirements

225 responded to the Training Strengths and Weaknesses'

35 professionals provided both Time 1 and Time 3 data

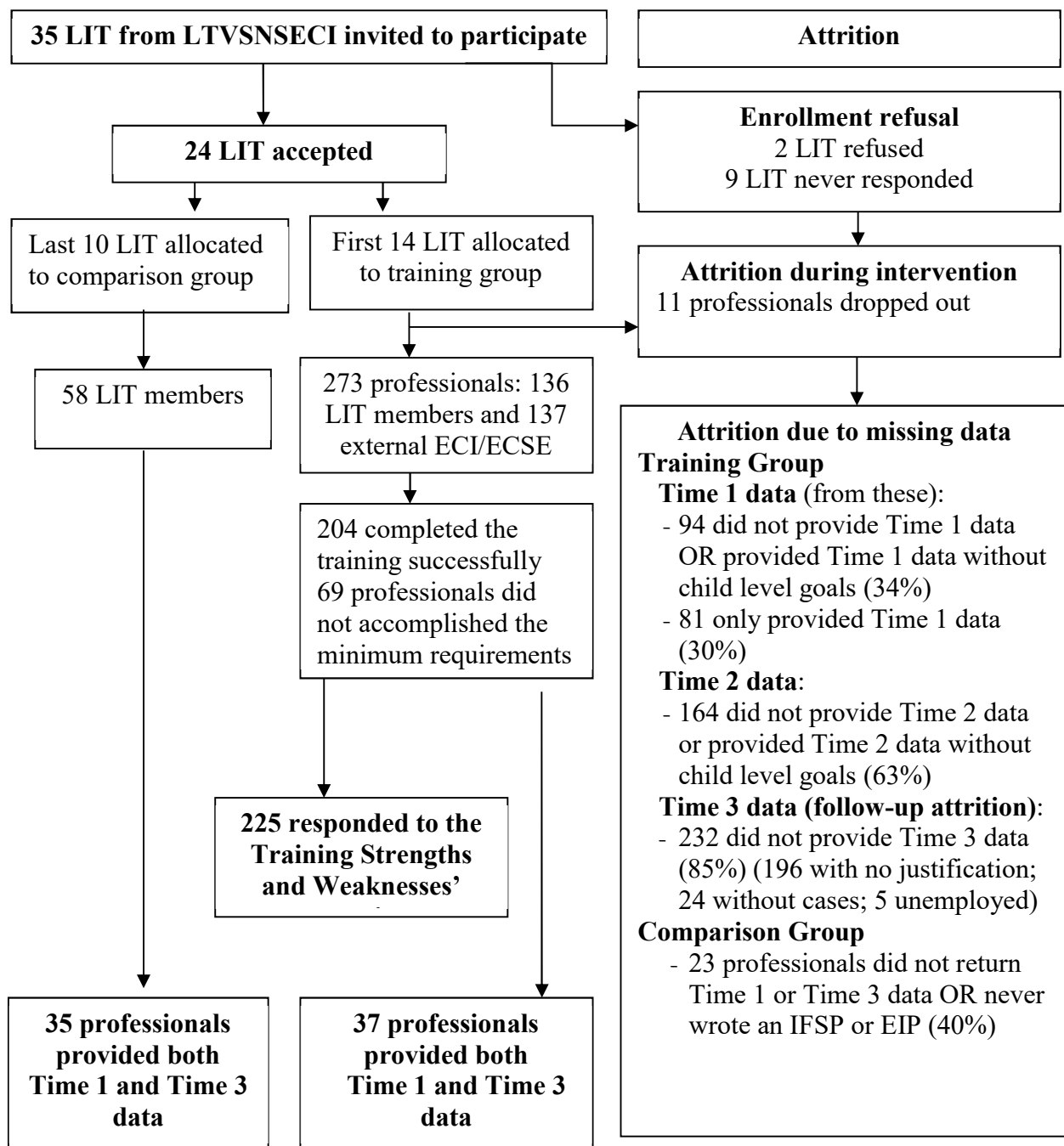**37 professionals provided both Time 1 and Time 3 data**

Figure 1. Participants' flow throughout the study. LIT = Local Intervention team; LTVSNSECI = Lisbon and Tagus Valley Subcommission of the National System of Early Childhood Intervention; IFSP = Individualized Family Services Plan; IEP = Individualized Education Program; ECI/ECSE = Early Childhood Intervention/ Early Childhood Special Education.