FACTORS PREDICTING PARENTS' INVOLVEMENT IN INTERVENTION
PROGRAMS FOR THEIR CHILDREN WITH AUTISM

GA-1044

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FINAL OUTCOMES REPORT

THE PROVINCIAL CENTRE OF EXCELLENCE FOR CHILD AND YOUTH MENTAL HEALTH AT CHEO

NOVEMBER 2010
# TABLE OF CONTENTS

Project Summary ............................................................................................................. 5

Project Overview ........................................................................................................... 6

Objective 1 – What is Parent Involvement? ................................................................. 7

Objective 2 – Factors Predicting Parents’ Involvement? ........................................... 8

Objective 3 – Parent and Therapist Report ................................................................. 11

Methodology .................................................................................................................. 11

Participants ................................................................................................................... 11

Measures ....................................................................................................................... 15

Parent Involvement Questionnaire ............................................................................... 15

Parent Involvement Questionnaire – Therapist Version ............................................ 21

Procedure ..................................................................................................................... 21

Results ............................................................................................................................ 23

Exploratory Factor Analysis of the Parent Involvement Items ................................... 23

Model of Involvement and Involvement’s Predictors .................................................. 28

Preparing the Data for SEM ....................................................................................... 30

Testing the Full Model ................................................................................................. 72

Comparison of Parents’ and Therapists’ Ratings of Parents’ Involvement .............. 35

Conclusion & Recommendations/Next Steps ............................................................. 38

Defining and Measuring Parent Involvement in IBI .................................................... 38

Predicting Parents’ Involvement in IBI ..................................................................... 41

Comparing Parents’ and Therapists’ Perspectives of Involvement .......................... 46

Limitations and General Directions for Future Research .......................................... 48
LIST OF TABLES

Table 1: IBI Entrance Assessment Data from File Review ........................................ 12
Table 2: Correlations among the Involvement Items .............................................. 24
Table 3: Rotated Factor Loadings for the Four Factor Model with Four Involvement
   Items Removed ........................................................................................................ 27
Table 4: Interfactor Correlations for the Revised Four Factor Model ......................... 28
Table 5: Internal Consistency and Descriptive Information for all
   Observed Variables ................................................................................................ 29
Table 6: Correlations among the Involvement Observed Variables ............................ 31
Table 7: Correlations among the Self-efficacy Observed Variables ............................ 31
Table 8: Correlations among the Belief Observed Variables .................................... 32
Table 9: Correlations between Parents’ and Therapists’ Ratings of Involvement ........ 36

LIST OF FIGURES

Figure 1: Initial model of involvement and involvement’s predictors ....................... 10
Figure 2: Model of involvement and involvement’s predictors ............................... 33
PROJECT SUMMARY

The importance of parents’ involvement in Intensive Behavioral Intervention (IBI) programs for their children with autism spectrum disorders (ASD) has been emphasized by professionals in the field. However, little research has explored this involvement or what it entails. A parent self-report questionnaire and a similar therapist questionnaire were designed for this study, in which parents’ involvement, self-efficacy, perception of child progress, belief in the intervention, stress, experiences of positive change, and perceived knowledge about autism and IBI, were operationalized and measured.

Questionnaires were completed by 105 parents and 64 therapists. To create a theoretically sound and statistically reliable measure of involvement, an exploratory factor analysis of 20 involvement items was conducted. This resulted in a good-fitting four-factor model (RMR = 0.05), in which four distinct types of involvement (formal IBI, child program, training, and agency) emerged. Structural equation modeling was used to create a model of factors predicting involvement, resulting in acceptable model-data fit (RMSEA = .078, SRMR = .072). Direct paths were examined between involvement and three of the variables; belief, stress, and self-efficacy. Self-efficacy emerged as the only direct significant predictor of involvement, while other variables indirectly influenced involvement through their relationship with self-efficacy. Comparisons of parents’ and therapists’ perceptions of parents’ involvement were conducted and yielded discrepant results, highlighting the importance of employing sensitivity and clarifying expectations when working with families. Furthermore, qualitative data were collected from parents and therapists about factors making it easier and more difficult for parents to be involved,
and thematic networks were applied to the data. Similarities and differences in parents’ and therapists’ reports are discussed. Results add support to the importance of providing services to parents with children in IBI programs. In particular, such opportunities should focus on ways to help parents increase their self-efficacy about participating in their children’s intervention programs, strengthening their beliefs in the effectiveness of the intervention, increasing their knowledge about autism and IBI, and helping them to cope with the stress of raising a child with autism. By targeting these areas we can ultimately encourage parents to become more effectively involved in their children’s intervention programs.

PROJECT OVERVIEW

It is those treatments based on a behavioural model that enjoy the broadest empirical validation with individuals who have autism (Eldevik, et al., 2009; Matson & Smith, 2008; National Autism Center, 2009; Schreibman, 2000). A significant number of studies now show that early, intensive instruction using the methods of Intensive Behavioural Intervention (IBI), a specific type of behavioural intervention, can result in dramatic improvements for at least some children with autism (e.g., Cohen, Amerine-Dickens, & Smith, 2006; Eikeseth, Smith, Jahr, & Eldevik, 2002, 2007; Lovaas, 1987; Perry et al., 2008; Sallows & Graupner, 2005). While the empirical literature about IBI continues to expand, there are some areas that remain under-researched to date. Notably, although clinicians acknowledge that family involvement is crucial to enhancing outcomes of IBI, or potentially undermining them, limited research has empirically evaluated or explored parents’ involvement and what this involvement entails. Therefore,
researchers in the autism field (e.g., Eikeseth, 2009; Hastings & Johnson, 2001; Kasari, 2002; Sallow & Graupner, 2005; Schreibman, 2000; Wolery & Garfinkle, 2002) concur that additional empirical data concerning the family and the family’s role in IBI is required.

Objective 1 – What is Parent Involvement?

Before we can systemically evaluate whether increased involvement results in children making greater progress in therapy, as many would assume clinically, we must first devise a theoretically meaningful and statistically sound way of measuring parent involvement. Overall, the concept of parent involvement in IBI has not been adequately defined in the research literature. In addition to lacking an empirical measure of involvement in IBI, the majority of research about involvement has focused on parents conducting formal teaching sessions, acting as therapists (e.g., Hastings & Johnson, 2001; McConachie & Diggle, 2007), or attending parent training programs (e.g., Dillenburger, Keenan, Gallagher, & McElhinney, 2004; Robbins, Dunlap, & Pleinis, 1991). However, expecting all parents to attend intensive parent training programs and/or to run formal sessions in their home, may not be feasible or realistic. For these parents it is vital to recognize and to emphasize that there are other ways to be involved. Furthermore, when considering the diverse ways that research has defined parents’ involvement in other educational programs for children with ASD and/or other disabilities (e.g., Benson, Karlof, & Siperstein, 2008; Gavidia-Payne & Stoneman, 1997; Hurth, Shaw, Izeman, Whaley, & Rogers, 1999), it is clear that such a narrow definition of involvement in IBI is too limiting. Therefore, it is important both to operationalize properly the construct of
parent involvement in IBI and to expand our conceptualization of the ways in which parents can be involved.

Taking into account the literature reviewed above and the advice and experiences of experts in the IBI field, the current study refined and expanded upon our previous measure of parent involvement in IBI (Solish, 2006; Solish & Perry, 2008). As described in greater detail in the Method section that follows, in the current study we conceptualized that three different, but likely related, types of involvement could be measured (i.e., agency involvement, child program involvement, and training involvement). Multiple items pertaining to each of these involvement types were included in the Parent Involvement Questionnaire. The involvement items on the questionnaire were used to address the first objective of this study, which was to create a comprehensive, statistically and theoretically sound measure of parent involvement in IBI. Such a measure of involvement could eventually be used in research evaluating whether parent involvement affects children’s progress in therapy. In the current study, this measure allowed for an exploration of factors influencing parents’ involvement in IBI programs.

Objective 2 – Factors Predicting Parents’ Involvement

If it is our goal as professionals to increase parental involvement in IBI, because of the presumed beneficial effects for children, we need to understand not only what involvement entails, but also what factors may affect parents’ abilities to be involved in intervention. While the importance of parental involvement in children’s programming is frequently acknowledged, there is relatively little information about what factors
contribute to some parents’ active involvement, whereas other parents are less involved in their children’s intervention programs (Gavidia-Payne & Stoneman, 1997; Solish & Perry, 2008). Furthermore, while some research has focused on how parent training or involvement influences other variables such as stress and increased confidence (e.g., Dillenburger, et al., 2004; Kuhn & Carter, 2006; McConachie & Diggle, 2007), little research has focused on parent involvement as an outcome variable. Within this limited research base are studies by two groups of authors, Gavidia-Payne and Stoneman (1997) and Benson and colleagues (2008). These studies emphasize the importance of determining the factors that influence parents’ involvement in general programming for children with special needs. However, there is no literature to date that adequately addresses the factors that affect parents’ degree of involvement in their children’s IBI programs specifically.

In the current study, a number of factors were selected to explore as predictors of parent involvement in IBI. Several of these factors have been examined in literature about other developmental disabilities, some are noted from clinical experience, and a few are in the literature about autism or IBI specifically. These factors include: parents’ belief in IBI, their perceptions about their knowledge of autism and IBI, and their self-efficacy [defined by Bandura (1997) as a person's belief about her or his ability to organize and execute courses of action to manage given situations] about being involved in their children’s IBI programs. Also explored are parents’ stress as well as the positive changes they perceive their child with ASD having brought to their lives. The model evaluated in this study can be seen in Figure 1. While some of the five predictor variables were
believed to influence parents’ involvement directly, others were hypothesized to have a more indirect effect on the involvement variable.

*Figure 1.* Initial model of involvement and involvement’s predictors.

In this model there are five parent factors believed to be related to parent involvement in IBI: parents’ self-efficacy, belief in IBI effectiveness, perceptions of knowledge, parenting stress, and positive changes. Given that several researchers have emphasized the importance of conducting studies to determine factors that influence parents’ involvement in programming for their children with disabilities (e.g., Benson et al., 2008; Gavidia-Payne & Stoneman, 1997; Solish & Perry, 2008), the second objective of this research was to explore factors predictive of parents’ involvement in their children’s IBI programs. While some research has focused on parent training and other
involvement activities as independent variables, the current study focuses on parent involvement as an outcome of the aforementioned factors. Rather than looking solely at the individual relationships between the five factors and involvement, I have created a hypothetical model that simultaneously explores the interrelationships amongst these variables.

Objective 3 – Parent and Therapist Report

The third objective of the current study was to explore the similarities and differences in parent and therapist reports of parent involvement, since previous research has highlighted discrepancies in parents’ and therapists’ ratings of parents’ involvement (e.g., Gavidia-Payne & Stoneman, 1997; Solish & Perry, 2008).

METHODOLOGY

Participants

One hundred five caregivers of children with autism (92 biological mothers or female guardians and 13 fathers) from diverse backgrounds participated in this study. The children (81 males and 23 females, 1 child for whom the gender was unknown) were diagnosed with Autistic Disorder, Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), or an unspecified PDD/Autism Spectrum Disorder. They ranged in age between 3 and 16 years, with a mean age of about 7 at the time of the study.

In addition to the demographic information about the children obtained through parent report, some standardized assessment data were collected from the children’s clinical files at their respective IBI agencies, with parents’ consent. Ninety-one parents (about 87%) consented for me to access this data. There was substantial variability in the
timing of the diagnostic and developmental assessments (e.g., when the child was screened for eligibility for the IBI program, when the child began the IBI program, and/or when the child was discharged from the IBI program). To be consistent, the children’s data from their entry assessment into IBI was used as an estimate of the children’s level functioning when IBI began, although this data was not available for all 91 children. The children’s assessment data are presented in Table 1.

Table 1

*IBI Entrance Assessment Data from File Review*

<table>
<thead>
<tr>
<th>Adaptive measure used</th>
<th>n (%) or M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VABS</td>
<td>20 (32.3%)</td>
</tr>
<tr>
<td>Vineland-II</td>
<td>36 (58.1%)</td>
</tr>
<tr>
<td>SIB-R</td>
<td>5 (8.1%)</td>
</tr>
<tr>
<td>ABAS</td>
<td>1 (1.6%)</td>
</tr>
<tr>
<td>Mean estimate of adaptive composite (standard score)</td>
<td>57.48 (13.12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive measure used</th>
<th>n (%) or M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullen</td>
<td>39 (72.2%)</td>
</tr>
<tr>
<td>Bayley</td>
<td>6 (11.1%)</td>
</tr>
<tr>
<td>Stanford Binet-5</td>
<td>3 (5.6%)</td>
</tr>
<tr>
<td>WPPSI-III</td>
<td>3 (5.6%)</td>
</tr>
<tr>
<td>WISC-IV</td>
<td>2 (3.7%)</td>
</tr>
<tr>
<td>Leiter-R</td>
<td>1 (1.9%)</td>
</tr>
<tr>
<td>Mean estimate of IQ standard score</td>
<td>45.31 (21.52)</td>
</tr>
<tr>
<td>Category of Intellectual Ability</td>
<td>n</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>Borderline</td>
<td>6</td>
</tr>
<tr>
<td>Mild Intellectual Disability</td>
<td>19</td>
</tr>
<tr>
<td>Moderate Intellectual Disability</td>
<td>21</td>
</tr>
<tr>
<td>Severe Intellectual Disability</td>
<td>15</td>
</tr>
<tr>
<td>Profound Intellectual Disability</td>
<td>2</td>
</tr>
</tbody>
</table>

Mean CARS score  

<table>
<thead>
<tr>
<th>CARS category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Autistic</td>
<td>5</td>
<td>9.6%</td>
</tr>
<tr>
<td>Mildly-Moderately Autistic</td>
<td>24</td>
<td>46.2%</td>
</tr>
<tr>
<td>Severely Autistic</td>
<td>23</td>
<td>44.2%</td>
</tr>
</tbody>
</table>

*Note:*  


n = 54. Mullen Scales of Early Learning (Mullen, 1995); Bayley Scales of Infant Development (3rd edition) (Bayley, 2005); Leiter International Performance Scale-Revised (Roid & Miller, 1995); Stanford-Binet Intelligence Scales, Fifth Edition (SB-V; Roid, 2003); Wechsler Preschool and Primary Scale of Intelligence (3rd edition) (WPPSI-3; Wechsler, 2002); Wechsler Intelligence Scales for Children (4th edition) (WISC-IV; Wechsler, 2003).  

n = 65. Category of intellectual ability was estimated based on the average of the adaptive and cognitive measures when both were available. In cases where only the cognitive or adaptive scores were available, the estimate of intellectual ability was based upon the single measure.  

Of the 105 children in this sample, 78% (82/105) were receiving services from a publicly-funded IBI program from one of the nine regional programs in Ontario (see Perry et al., 2008 for a description of the program). Ethical approval was obtained to recruit participants from six of these regions: Toronto Partnership for Autism Services;
Preschool Autism Program Eastern Region - Children’s Hospital of Eastern Ontario, Ottawa; Autism Program South West Region - Thames Valley Children’s Centre, London; Northern Region IBI Program; Pathways for Children and Youth, Kingston; and Central East Autism Program. The response rate for children receiving publicly funded services was about 15%. This is consistent with my previous work about parent involvement in which the response rate was about 20% (Solish, 2006).

The remaining 23 children (22%) were receiving services from a number of privately funded programs across Ontario. Of these children, 10 parents reported receiving money to fund the program from the government (Direct Funding Option), 3 parents reported using a combination of government funding and personal finances, and 6 parents reported supporting the therapy exclusively through personal finances. Information about the funding for the other four children was not available. The response rate for these families could not be accurately calculated, because information about the study was distributed through list serves and posted on websites. In terms of the actual number of packages distributed, the response rate was comparable to the publicly funded families at about 16%.

A series of independent $t$-tests were conducted to ensure that there were no significant differences on any of the main variables of interest in this study (e.g., self-efficacy, involvement, stress, etc.) between the children receiving publicly and privately funded IBI services. Results of the $t$-tests were non-significant ($p > .05$) and therefore the families from public and private services options were combined to create a total sample of 105 participants.
The children’s therapists were also asked to participate in this research (with parents’ consent). Of a potential 105, 91 parents (87%) consented for their children’s therapists to complete the therapist version of the questionnaire, and 70% of the questionnaires (64/91) were returned. Therapists reported working with a range of 3 to 50 families, and having worked in the IBI field between 1 and 12 years. The therapist completing the questionnaire had worked with the child in question between 4 months and 6 years at the time of the study. Forty-five therapists identified themselves as Senior Therapists, 16 as Instructor Therapists, and three as Clinical Supervisors of the children’s programs.

Measures

Parent Involvement Questionnaire

The Parent Involvement Questionnaire (see Appendix A) was created for my Master’s thesis (Solish, 2006) and for future studies in this area. Categories and specific questions for the questionnaire were rationally derived from a number of sources including; a review of the general literature about parent involvement and the minimal literature about parent involvement in IBI, as well as by consulting with experienced IBI professionals. These professionals included the clinical directors in charge of the programs from which participants were recruited as well as experienced IBI therapists. The professionals gave feedback about the appropriateness, wording, format, and content of the questionnaire, and this feedback was used in subsequent revisions of the measure. Prior to using the questionnaire in my Master’s thesis it was piloted with a few parents of children with autism, not participating in the actual study, to ensure that parents found it
easy to understand, manageable time-wise, and sensitive to their experiences of raising children with special needs. After using the questionnaire for my Master’s thesis I used the results, feedback, and responses from parents to make some slight revisions. The new version of the questionnaire was used in this study. The questionnaire is made up of six sections reflecting the six constructs being explored in this study.

*Involvement.* The concept of parents’ involvement in the child’s IBI program is comprised of 24 items, in Part I of the questionnaire. It was conceptualized that three different, but likely related, types of involvement could be measured including agency involvement, child program involvement, and training involvement. Agency involvement (questions 1-6) measures the parents’ participation in various aspects of the child’s IBI program in conjunction with the agency from which the child is receiving services. Child program involvement is measured through 12 questions. Eight questions ask parents to what extent they do formal IBI sessions and promote generalization in four areas (academic skills, social and play skills, communication skills, and self-help skills) (questions 21-28). Four other questions also comprise the child program involvement variable (questions 29, 30, 31, & 40). Training involvement is based on parents’ participation in IBI or behavioural training, as well as the extent to which they seek out learning opportunities. Six items that measure training involvement are included (questions 11-16). The majority of questions are answered on a Likert scale from “never” (1) to “frequently” (5). To help minimize subjectivity, descriptors for the numbers on the Likert scale have been included (e.g., “sometimes” (3) is defined as once per week or on
some occasions, and “frequently” (5) is defined as daily or on every possible occasion). Higher scores on this section reflect greater parental involvement.

**Self-efficacy.** Parents’ self-efficacy about their participation in their child’s IBI program is measured through four different types of questions similar to those asked by Hastings and Symes (2002) in their research concerning self-efficacy. Parents are asked to rate how difficult it is for them to participate (questions 7, 17, 32, 36, and 41), how effective they believe they are at participating (questions 8, 18, 32, 37, and 42), how confident they feel participating (9, 19, 33, 38, and 43), and how much they feel their involvement makes a difference in their child’s progress (10, 20, 34, 39, and 44), in reference to a number of involvement items. Specifically, these four questions are asked in reference to parents’ overall agency involvement (questions 7-10), overall training involvement (questions 17-20), implementation of formal IBI sessions (questions 32-35), generalization of skills (questions 36-39), and handling of problem behaviours in a manner consistent with the IBI staff (questions 41-44). The 20 questions about self-efficacy are answered on a 5-point Likert scale from “not at all” (1) to “extremely” (5). Questions 7, 17, 32, 36, and 41 (how difficult do you find it to participate) are reversed scored, so that less difficulty signifies greater self-efficacy. Higher scores are indicative of greater parent self-efficacy about participating in various aspects of their children’s IBI programs.

**Belief in IBI.** The first questions in Part II of the questionnaire determine the parents’ belief about how much change their child has undergone since beginning IBI therapy (questions 45 and 46). Parents are given a guideline for what constitutes “low”,
“medium”, and “high” functioning and asked to rate their child’s abilities on a 5-point Likert scale before and after participating in an IBI program. Parents are also asked how much they believe that a change in their child’s functioning, if any, is a result of their child’s participation in IBI (question 47). These items do not factor into the scoring for the belief variable discussed in the Results section below.

The second part of this section (questions 48-52) asks parents to rate their child’s improvement in five specific domains: social and play skills, academic skills, communication skills, self-help skills, and problem behaviours. All questions are answered on a Likert scale ranging from “got worse” (1) to “substantially improved” (5). Higher scores on this subscale signify greater perception of child progress in IBI.

Part III includes 13 questions that tap into parents’ beliefs and “buy-in” to IBI therapy. All questions are answered on a Likert scale, with choices ranging from “Strongly Agree” (5) to “Strongly Disagree” (1). Questions 54 and 57 are reverse scored. Higher scores are indicative of greater belief in IBI therapy. The first part of this section captures parents’ general beliefs about IBI (questions 53-58), whereas the second part taps into parents’ attitudes about IBI specifically for their child (questions 59-65). This distinction between general and specific beliefs was made in Hastings’ and Johnson’s (2001) work, although not reported on in the results.

Parent negative and positive impact. The first 12 questions in Part IV (questions 66-77) have been taken, with the permission of the publisher (Psychological Assessment Resources, Inc.), from the Parenting Stress Index Short-Form (PSI-SF; Abidin, 1995) Parental Distress (PD) subscale. The PSI-SF is a parent report measure of stress with 36
items, using a 5-point Likert scale, that can be scored according to three subscales (Parental Distress, Difficult Child, and Parent-Child Dysfunctional Interaction) and a Total score. For the purposes of this study, only the PSI-SF PD domain is included, since using total stress scores confounds the measurement of parent stress with child difficulty (Anastopoulous, Guevremont, Shelton, & Dupont, 1992; Haskett, Ahern, Ward, & Allaire, 2006; Perry, 2004; Podolski & Nigg, 2001). Therefore, using only the PD subscale, which determines the distress a parent is experiencing in his/her role as a parent as a function of personal factors directly related to parenting, provides more meaningful information about parents’ stress levels. This subscale has strong internal consistency with an alpha level of .87 (Abidin, 1995).

The 12 PSI-SF Parental Distress subscale questions are answered on a scale identical to that in the belief section, with responses ranging from “Strongly Agree” (5) to “Strongly Disagree” (1). Out of a score of 60, parents’ with higher scores experience more parental distress according to the PSI-SF scoring.

The middle part of this section (questions 78-95) addresses some of the positive changes that parents experience through parenting a child with special needs. The questions are taken from the parental change subscale of the Life Management Survey created and used by Scorgie and Sobsey (2000). In previous work with parents of children with autism this measure showed good reliability, with an alpha of .86 for mothers and .81 for fathers (Diamond, 2005).

The last part of this section contains questions constructed for the purposes of this study asking parents directly about how stressed they feel (questions 96-98). These
questions are answered on a 5-point Likert scale from “not at all” (1) to “extremely” (5). The first two questions are used to compare parents’ reports of perceived stress at the time of the child’s intake into the IBI program versus stress at the time of the study. The final question asks parents how much they believe that a change in stress level, if any, is a result of their child’s participation in IBI. These scores are not reported on in the present study.

Knowledge of autism and IBI. The first part of the knowledge section (Part V) asks parents to rate their knowledge about autism and IBI compared to the general population (questions 99 and 100) on a Likert scale from “low” (1) to “high” (5). The second half of this section contains 10 questions about autism (questions 101-110) and 10 questions about IBI (questions 111-120). These questions were constructed for the purpose of this study by consulting with professionals in the field and experienced IBI therapists. All questions are answered by circling “T”, true, “F”, false, or “DK”, don’t know. Each correct answer is given 1 point, resulting in a maximum score of up to 20. For the purposes of the present study, parents’ perceived knowledge (questions 99 and 100) is of greater interest rather than actual knowledge. All other variables in this study, including involvement, were based upon parents’ self-report and individual perspectives. Therefore, I included the measure of perceived knowledge only, in an effort to be consistent with the measurement of the other variables in this study.

Open-ended questions. The last section of the Involvement Questionnaire asks parents to comment on what things about their personal and family situation make it easier to be involved in their child’s program (e.g., support from extended family or
friends, financial resources), as well as what things about their personal and family situation make it more difficult to be involved in their child’s program (e.g., other stressful events at home, lack of support system).

*Parent Involvement Questionnaire – Therapist Version*

With parents’ consent, the senior therapists were asked to complete a similar questionnaire, which consists of questions about the parents’ involvement in IBI as well as questions about the predictor variables (see Appendix B). This version of the questionnaire is shorter in length, with fewer and more general questions. It also includes a section with open-ended questions where therapists are asked to comment on parent or family factors that positively affect the quality of IBI the child receives (e.g., support from extended family or friends, financial resources), as well as what parent or family factors detract from/negatively affect the quality of IBI the child receives (e.g., other stressful events at home, lack of support system). In cases where both the mother and father are present in the home, the therapists were asked to answer questions in reference to the two parents separately if possible.

*Procedure*

Parents with children participating in the aforementioned IBI service providers’ intervention programs received a package from their respective agencies. Some agencies chose to mail the packages, whereas others chose to place the packages in children’s backpacks or in the family’s mailbox at the treatment centre. The packages contained an information letter detailing the purpose of this study and a consent form, the parent version of the questionnaire, a child information sheet, and a cover letter of support.
written by the clinical director at each agency. After reading the information letter, parents had the opportunity to decide whether they wished to participate in this study. If they decided to do so, they were asked to read and sign the consent form.

The first part of the consent form asked for parents to consent to participate in the study. The next part asked for parents’ permission for their child’s senior therapist to participate in the study by completing the therapist version of the Parent Involvement Questionnaire. The information letter made it clear to the parents that the therapists would not participate unless they gave the therapists permission to do so. The third part of the consent form asked for parental permission to allow the researcher to obtain information from their child’s clinical file or for the agency to release specific information from the files to the researcher. Participants were free to choose whether they wanted to consent to some or all of these requests. They were also made aware that their participation was completely voluntary and that they were free to terminate participation at any time.

Once the consent form was signed and the questionnaire completed, both were returned to the researcher in a postage paid envelope included in the original package sent to the family. The researcher then mailed a copy of the therapist questionnaire and a postage paid envelope to the agency to be distributed to the appropriate therapist together with a copy of the parent’s consent form so that the child’s file data could be released. A thank-you letter was sent to the parents (and the therapist if appropriate) in appreciation of their time.
RESULTS

Exploratory Factor Analysis of the Parent Involvement Items

One of the primary goals of the current study was to devise a reliable way of measuring parents’ involvement in IBI programs. As described in the method section, there were 24 items included in the Parent Involvement Questionnaire intended to measure different aspects of involvement. In the questionnaire, I conceptualized three different, but likely related, types of involvement could be operationalized and measured (child program, agency, and training involvement). These distinctions were devised based upon consultation with experienced IBI professionals.

Before an exploratory factor analysis was conducted, I implemented an expectation maximization (EM) algorithm to impute missing values in the involvement variables. Given the lack of previous research about the distinction among different involvement types, an exploratory factor analysis using Ordinary Least Squares extraction was conducted to test my theory that some involvement items would be more closely inter-related than others. Inter-item correlations for the 24 involvement items are presented in Table 4. For the purpose of these analyses, the items, which were responded to on a 5-point Likert scale, were treated as continuous variables. Research suggests that relatively accurate results can still be obtained when ordinal item responses are treated as continuous as long as there are five or more response options (Finney & DiStefano, 2006).
Table 2

Correlations among the Involvement Items (n = 105)

| Item # | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1     | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2     | 1.2 | .19 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3     | .38 | .09 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4     | .12 | .27 | .38 | .12 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5     | .18 | .27 | .42 | .16 | .12 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 6     | .20 | .06 | .52 | .29 | .09 | .42 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 7     | .23 | .22 | .35 | .33 | .32 | .43 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 8     | .06 | .09 | .10 | .26 | .09 | .27 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9     | -0.06 | .17 | .06 | .10 | .32 | .05 | .14 | .08 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 10    | -0.02 | .24 | .02 | .27 | .27 | .02 | .21 | .06 | .72 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 11    | .07 | .22 | .01 | .21 | .10 | .05 | .12 | .08 | .08 | .27 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 12    | .06 | -.12 | .22 | .16 | .17 | .24 | .25 | .10 | .34 | .30 | -.02 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 13    | .09 | .11 | .21 | .23 | .21 | .22 | .15 | .01 | .14 | .11 | .04 | .31 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |     |
| 14    | .17 | .11 | .15 | .20 | .38 | .08 | .22 | .21 | .40 | .31 | .16 | .13 | .14 | 1.0 |     |     |     |     |     |     |     |     |     |     |     |
| 15    | .18 | .11 | .25 | .10 | .18 | .35 | .17 | .04 | .01 | -.03 | -.01 | .29 | .76 | -.06 | 1.0 |     |     |     |     |     |     |     |     |     |     |
| 16    | .04 | .09 | .06 | .16 | .36 | .03 | .20 | .23 | .27 | .23 | .19 | .05 | .01 | .57 | .02 | 1.0 |     |     |     |     |     |     |     |     |     |
| 17    | .10 | .09 | .21 | .15 | .14 | .27 | .15 | -.04 | .04 | -.05 | -.06 | .30 | .81 | -.02 | .87 | -.01 | 1.0 |     |     |     |     |     |     |     |     |
| 18    | .16 | .16 | -.01 | .16 | .24 | .01 | .15 | .21 | .19 | .12 | .15 | .05 | .02 | .42 | -.06 | .58 | .05 | 1.0 |     |     |     |     |     |     |     |
| 19    | .08 | .11 | .20 | .24 | .15 | .30 | .21 | -.04 | -.08 | -.03 | -.05 | .22 | .76 | -.10 | .80 | -.09 | .88 | -.06 | 1.0 |     |     |     |     |     |     |
| 20    | .12 | .23 | .03 | .21 | .29 | -.08 | .11 | .25 | .16 | .13 | .09 | -.02 | -.06 | .45 | -.15 | .53 | -.15 | .51 | -.08 | 1.0 |     |     |     |     |     |     |
| 21    | .10 | .05 | .19 | .22 | .17 | .36 | .25 | -.01 | -.06 | -.04 | -.01 | .24 | .74 | -.10 | .77 | -.06 | .82 | -.05 | .80 | -.11 | 1.0 |     |     |     |     |     |
| 22    | .17 | -.01 | .14 | .20 | .32 | .04 | .17 | .14 | .14 | .15 | .23 | .02 | .05 | .45 | -.09 | .50 | .03 | .53 | -.06 | .47 | .15 | 1.0 |     |     |     |     |
| 23    | .22 | .05 | .17 | .38 | .30 | .13 | .31 | .09 | .13 | .15 | .14 | .20 | .31 | .41 | .22 | .34 | .25 | .25 | .26 | .28 | .44 | 1.0 |     |     |     |     |
| 24    | .11 | .30 | .02 | .08 | .32 | .07 | .18 | .05 | .47 | .41 | .19 | .14 | .03 | .29 | -.02 | .12 | .01 | .15 | -.02 | .15 | .01 | .26 | .30 | 1.0 |     |     |

**p ≤ .01, *p < .05.
Note. For Table 4. 1. communicate with IBI staff; 2. read/write in child’s communication book; 3. watch therapy; 4. attend review meetings; 5. do homework; 6. hours per week involved in IBI agency; 7. individual coaching/feedback from IBI staff; 8. seek out information about autism and IBI; 9. hours of behavioural parent training courses; 10. hours of behavioural lectures/presentations; 11. university/college courses about autism/IBI; 12. hours per week involved in training activities; 13. formal IBI sessions – academic skills; 14. generalize – academic skills; 15. formal IBI sessions – social and play skills; 16. generalize – social and play skills; 17. formal IBI sessions – communication skills; 18. generalize – communication skills; 19. formal IBI sessions – self-help skills; 20. generalize – self-help skills; 21. hours per week involved in formal IBI sessions; 22. hours per week promoting generalization; 23. familiar with IBI program goals; 24. handle problem behaviours consistently with IBI program.

A scree plot of the eigenvalues was created and examined to obtain an estimate of the number of factors that might be appropriate for the EFA. The scree plot suggested that a two- or a four-factor model would best fit the data. The four-factor model was tested first, because theoretically this model was more similar with our initial conceptualization of the involvement items.

The root mean square off-diagonal residuals value (RMR) for the four-factor model was about 0.05, which suggested a good-fitting model (Hu & Bentler, 1999). Within this four-factor model, four of the items were deemed problematic. Three of the items (seeking out information about autism and IBI, attending university/college courses about autism/IBI, and reading/writing in the child’s communication book) had weak factor loadings on all factors, with the strongest loadings ranging between .16 and .22. Furthermore, these items had low communality estimates ranging between .08 and .11. These three items were subsequently deleted from the EFA. In addition, the item pertaining to handling the child’s problem behaviours in a manner that is consistent with the IBI program staff loaded most strongly on the training involvement factor (Factor 3).
This result is not theoretically sound, and thus this item was deleted from the EFA because of its weak content validity.

Internal consistency analyses were conducted to determine whether removing these four items improved reliability. Initially, the item about seeking information about autism and IBI loaded weakly onto the child program involvement factor (0.22). Upon deleting this item from the factor, the internal consistency of the scale improved (initial Cronbach’s α = .79; revised α = .82). Similarly, the items pertaining to reading/writing in the child’s communication book and handling problem behaviours consistently with the IBI staff, initially loaded onto the training involvement factor (loadings of 0.21 and 0.50, respectively). The item about attending university/college courses about autism/IBI had a weak double loading on factors 2 and 3 (0.16), although theoretically we conceptualized that this item would load on factor 3. When these three items were deleted from the training involvement factor, the internal consistency of the scale improved (initial Cronbach’s α = .68; revised α = .72).

A new EFA was then conducted with these four items deleted to ensure that none of the other loadings were affected. Rotated factor loading estimates for the four-factor model with 20 items are seen in Table 3. All of the items loaded on the same factors as in the EFA with 24 items. Overall, in this new EFA all items had positive loadings onto one of the four factors, with the strength of the loadings improving and ranging between .32 and .99. All loadings were salient.

In this 20-item EFA, one item (completing homework provided by the IBI staff) loaded on both the child program involvement factor and the agency involvement factor.
We had conceptualized that this item would load on factor 4; however, to ensure that the decision to include this item on factor 4 was statistically sound, we reran the internal consistency analysis for factor 2 including this item. Adding the item to the child program involvement factor (factor 2) did not improve the internal consistency of this scale (Cronbach’s $\alpha = .81$ with the item; $\alpha = .82$ without the item). Furthermore, removing the item from factor 4 lowered the internal consistency of this factor (Cronbach’s $\alpha = .72$ with the item; $\alpha = .70$ without the item). Thus, we decided based on both theoretical and statistical grounds to retain this item as part of factor 4.

Table 3

*Rotated Factor Loadings for the Four Factor Model with Four Involvement Items Removed*

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 “formal IBI involvement”</th>
<th>Factor 2 “child program involvement”</th>
<th>Factor 3 “training involvement”</th>
<th>Factor 4 “agency involvement”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal IBI sessions – communication skills</td>
<td>0.99</td>
<td>0.03</td>
<td>-0.02</td>
<td>-0.10</td>
</tr>
<tr>
<td>Formal IBI sessions – self-help skills</td>
<td>0.91</td>
<td>-0.04</td>
<td>-0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Formal IBI sessions – academic skills</td>
<td><strong>0.87</strong></td>
<td>0.06</td>
<td>0.13</td>
<td>-0.08</td>
</tr>
<tr>
<td>Formal IBI sessions – social/play skills</td>
<td><strong>0.87</strong></td>
<td>-0.08</td>
<td>-0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Hours per week conducting IBI sessions</td>
<td><strong>0.86</strong></td>
<td>0.01</td>
<td>-0.10</td>
<td>0.07</td>
</tr>
<tr>
<td>Generalization – social/play skills</td>
<td>-0.01</td>
<td><strong>0.75</strong></td>
<td>0.09</td>
<td>-0.05</td>
</tr>
<tr>
<td>Generalization – communication skills</td>
<td>0.02</td>
<td><strong>0.73</strong></td>
<td>-0.04</td>
<td>-0.07</td>
</tr>
<tr>
<td>Hours per week promoting generalization</td>
<td>0.02</td>
<td><strong>0.73</strong></td>
<td>-0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>Generalization – self-help skills</td>
<td>-0.10</td>
<td><strong>0.70</strong></td>
<td>-0.03</td>
<td>-0.03</td>
</tr>
<tr>
<td>Generalization – academic skills</td>
<td>-0.08</td>
<td><strong>0.59</strong></td>
<td>0.24</td>
<td>0.09</td>
</tr>
<tr>
<td>Familiarity with child’s program goals</td>
<td>0.24</td>
<td><strong>0.44</strong></td>
<td>0.03</td>
<td>0.17</td>
</tr>
<tr>
<td>Hours of behavioural parent training courses</td>
<td>-0.04</td>
<td>0.07</td>
<td><strong>0.90</strong></td>
<td>-0.13</td>
</tr>
<tr>
<td>Hours of behavioural lectures/workshops/conferences</td>
<td>-0.08</td>
<td>0.04</td>
<td><strong>0.79</strong></td>
<td>-0.01</td>
</tr>
<tr>
<td>Hours per week involved in training activities</td>
<td>0.19</td>
<td>-0.09</td>
<td><strong>0.38</strong></td>
<td>0.19</td>
</tr>
<tr>
<td>Hours per week involved in child’s IBI agency</td>
<td>0.05</td>
<td>-0.17</td>
<td>-0.04</td>
<td><strong>0.76</strong></td>
</tr>
<tr>
<td>Watching the child in therapy sessions</td>
<td>-0.02</td>
<td>-0.08</td>
<td>-0.01</td>
<td><strong>0.68</strong></td>
</tr>
<tr>
<td>Receiving individual coaching/feedback from IBI staff</td>
<td>-0.01</td>
<td>0.07</td>
<td>0.13</td>
<td><strong>0.56</strong></td>
</tr>
<tr>
<td>Communicating with IBI staff</td>
<td>-0.01</td>
<td>0.13</td>
<td>-0.13</td>
<td><strong>0.39</strong></td>
</tr>
<tr>
<td>Attending review meetings/input into goal setting</td>
<td>0.06</td>
<td>0.17</td>
<td>0.12</td>
<td><strong>0.38</strong></td>
</tr>
<tr>
<td>Completing homework provided by the IBI staff</td>
<td>0.05</td>
<td>0.30</td>
<td>0.22</td>
<td><strong>0.32</strong></td>
</tr>
</tbody>
</table>
Communality estimates for this new model ranged between .18 and .93. The RMR improved slightly to a value of 0.04, which suggests a good-fitting model (Hu & Bentler, 1999). The revised interfactor correlations are displayed in Table 4. When controlling for the other factors, about 18% of the variance in the collection of observed variables is explained by Factor 1 (formal IBI involvement), 13% is explained by Factor 2 (child program involvement), 8% is explained by Factor 3 (training involvement), and 7% is explained by Factor 4 (agency involvement).

Table 4

*Interfactor Correlations for the Revised Four Factor Model*

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 2</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 3</td>
<td>.12</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>Factor 4</td>
<td>.38</td>
<td>.26</td>
<td>.18</td>
</tr>
</tbody>
</table>

As a result of the exploratory nature of this analysis, two- and three-factor models were tested (the former because of the scree plot and the latter because of our initial conceptualization of three involvement types) to ensure that the four-factor model was the best model to account for the observed data. The decision was made to retain the four-factor model, as it was both conceptually meaningful and the most parsimonious model that adequately accounted for the observed data.

*Model of Involvement and Involvement’s Predictors*

The involvement factors obtained in the EFA were included as observed variables in the next set of analyses. In the SEM, the involvement variables were used in
conjunction with the other variables listed in Table 5. The means for the variables in Table 5 are presented as scores out of five, which allows the means to be considered and presented in a common metric. Of note, the distributions for a number of these observed variables were non-normal. As described in more detail below, steps were taken to account for this in the SEM presented.

Table 5

*Internal Consistency and Descriptive Information for all Observed Variables*

<table>
<thead>
<tr>
<th>Observed variable</th>
<th>Cronbach’s α</th>
<th>M (SD)</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child program involvement</td>
<td>.79</td>
<td>4.13 (.63)</td>
<td>-1.03</td>
<td>.51</td>
</tr>
<tr>
<td>Agency involvement</td>
<td>.72</td>
<td>3.40 (.79)</td>
<td>-.35</td>
<td>-.21</td>
</tr>
<tr>
<td>Training involvement</td>
<td>.73</td>
<td>1.74 (1.13)</td>
<td>0.21</td>
<td>-.88</td>
</tr>
<tr>
<td>Formal IBI involvement</td>
<td>.95</td>
<td>2.40 (1.34)</td>
<td>.26</td>
<td>-1.24</td>
</tr>
<tr>
<td>Self-efficacy – generalization</td>
<td>.79</td>
<td>4.03 (.77)</td>
<td>-.75</td>
<td>.71</td>
</tr>
<tr>
<td>Self-efficacy – agency</td>
<td>.76</td>
<td>3.93 (.81)</td>
<td>-.49</td>
<td>-.05</td>
</tr>
<tr>
<td>Self-efficacy – training</td>
<td>.80</td>
<td>3.45 (.95)</td>
<td>-.33</td>
<td>.09</td>
</tr>
<tr>
<td>Self-efficacy – problem behaviour</td>
<td>.81</td>
<td>3.57 (.86)</td>
<td>-.04</td>
<td>-.20</td>
</tr>
<tr>
<td>Self-efficacy – formal IBI sessions</td>
<td>.72</td>
<td>3.29 (.80)</td>
<td>-.02</td>
<td>-.55</td>
</tr>
<tr>
<td>Stress</td>
<td>.92</td>
<td>2.65 (.90)</td>
<td>.31</td>
<td>-.40</td>
</tr>
<tr>
<td>Positive change</td>
<td>.88</td>
<td>3.65 (.60)</td>
<td>.09</td>
<td>-.57</td>
</tr>
<tr>
<td>Perceived knowledge</td>
<td>.83</td>
<td>4.25 (.90)</td>
<td>-1.02</td>
<td>.03</td>
</tr>
<tr>
<td>Belief about child progress</td>
<td>.84</td>
<td>4.16 (.75)</td>
<td>-.74</td>
<td>-.56</td>
</tr>
<tr>
<td>Belief in IBI in general</td>
<td>.72</td>
<td>4.32 (.55)</td>
<td>-.88</td>
<td>1.05</td>
</tr>
</tbody>
</table>
Preparing the Data for SEM

Some of the observed variables were used to represent three latent variables: involvement, self-efficacy, and belief. Creating latent variables is preferable when feasible. Whereas a traditional path analysis model implies a perfect relationship between observed and latent variables, in SEM we have multiple indicators of each construct that can be used to account for measurement error in our observed variables. This is done by relating the indicators to an underlying latent variable using a measurement model.

The involvement latent variable is comprised of the child program, agency, and training involvement observed variables. The formal IBI involvement variable was excluded from the model for several reasons. Firstly, as can be seen in Table 6, child program, agency, and training involvement were all correlated with one another. However, formal IBI involvement was significantly correlated only with agency involvement, and quite unrelated to the other two involvement variables. In addition, it is worth noting that a substantial number of parents, about 25%, reported not being involved in formal IBI sessions in any capacity. Therefore, for both statistical and theoretical reasons, formal IBI involvement was excluded from the involvement latent variable.

<table>
<thead>
<tr>
<th>Belief in IBI for “my child”</th>
<th>.85</th>
<th>4.33 (.56)</th>
<th>-.61</th>
<th>-.34</th>
</tr>
</thead>
</table>

*Note.* The data for the involvement variables is from the original (non-imputed) dataset. 
\(^a\)\(n = 98.\) \(^b\)\(n = 102.\) \(^c\)\(n = 100.\) \(^d\)\(n = 104.\) \(^e\)\(n = 103.\) \(^f\)\(n = 91.\) \(^g\)\(n = 65.\) \(^h\)\(n = 105.\) \(^i\)\(n = 86.\)
Table 6

<table>
<thead>
<tr>
<th>Correlations among the Involvement Observed Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Program</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Agency</td>
</tr>
<tr>
<td>Training</td>
</tr>
<tr>
<td>Formal IBI</td>
</tr>
</tbody>
</table>

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

The self-efficacy latent variable consists of the observed variables of self-efficacy related to generalization, agency, training, and problem behaviour. Correlations among the observed self-efficacy variables are presented in Table 7. Similar to formal IBI involvement, overall self-efficacy about participating in formal IBI sessions is not as strongly correlated with the other self-efficacy variables. Furthermore, because many parents reported not doing formal IBI sessions, there was a significant amount of missing data (between 37% - 45%) for the self-efficacy variable about participating in formal IBI sessions. For these reasons, self-efficacy about formal IBI sessions was not included in the self-efficacy latent variable.

Table 7

<table>
<thead>
<tr>
<th>Correlations among the Self-efficacy Observed Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalization</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Agency</td>
</tr>
<tr>
<td>Training</td>
</tr>
<tr>
<td>Problem behaviour</td>
</tr>
<tr>
<td>Formal IBI</td>
</tr>
</tbody>
</table>

**p < .01. *p < .05.
The belief latent variable contains the general belief in IBI effectiveness, belief in IBI for “my child”, and the belief about child progress in IBI observed variables. These observed variables were all significantly correlated with one another (see Table 8), but were not co-linear; therefore all three observed variables were included in the formation of the belief latent variable.

Table 8

*Correlations among the Belief Observed Variables*

<table>
<thead>
<tr>
<th></th>
<th>General belief</th>
<th>“My child” belief</th>
</tr>
</thead>
<tbody>
<tr>
<td>“My child” belief</td>
<td>.54**</td>
<td></td>
</tr>
<tr>
<td>Child progress</td>
<td>.33**</td>
<td>.57**</td>
</tr>
</tbody>
</table>

**p < .01.

The remaining variables (stress, positive change, and perceived knowledge) were included in the model as observed variables that were not explicitly specified as indicators of latent variables.

*Testing the Full Model*

The model is presented in Figure 2. The circles represent latent variables and the rectangles observed variables. The absence of a line connecting variables indicates that there was no hypothesized direct effect between the variables. MPlus version 5.21 was used to conduct the structural equation modeling. Full information maximum likelihood estimation was used to account for missing data. Furthermore, because the variable distributions were non-normal, maximum likelihood estimation with robust fit statistics and standard errors was used (MLR).
**Figure 4.** Model of involvement and involvement’s predictors.

Note. Although not depicted in Figure 4, the residual term for agency involvement was correlated with the residual term for agency self-efficacy, the residual term for training involvement was correlated with the residual for training self-efficacy, and the child program involvement residual was correlated with the generalization self-efficacy residual. All of these relationships were significant, \( p < .01 \). This is a result of method effects.

\*\* \( p < .01 \)

\* \( p = .067 \)
Concerning model fit, the chi-square goodness of fit test \( \chi^2(52) = 85.47, p = .002 \) was significant. Although a good fit can sometimes be indicated by a nonsignificant chi-square statistic, it is essential to note that this statistic is highly influenced by sample size. Therefore, additional fit indices were considered. The comparative fit index (CFI) for this model is .912. CFI values greater than .95 are often indicative of good-fitting models (Hu & Bentler, 1999), and thus according to this guideline, the current model-data fit is below the optimal range. However, the root mean square error of approximation (RMSEA) for the model is .078, which suggests that the model is on the border of the “acceptable fit” range (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). Hu and Bentler (1999) found that in small samples the RMSEA over-rejected the true model. In the present model, despite the small sample size, the RMSEA suggested acceptable model-data fit. Furthermore, the standardized root mean square residual (SRMR) for this model is .072. According to Hu and Bentler (1999), SRMR values of .08 or less are desired. Thus, both the RMSEA and SRMR suggest acceptable model-data fit.

All factor loadings and structural path coefficients are included in Figure 4. All factor loadings were positive and significant. Furthermore, the squared multiple correlations for the latent and observed variables were all significant as well. For the latent variables, 72% of the variation in self-efficacy and 25% of the variation in belief is accounted for by the model. In addition, a large proportion of the variation in involvement, 67%, is accounted for by the model.

The model presented in Figure 4 includes values for all significant path coefficients and estimates of factor loadings. As can be seen in the model, positive change scores were negatively correlated with stress as measured by the PD of the PSI. Greater positive change scores also significantly predicted higher belief in IBI scores. In addition, greater belief in IBI was correlated
with higher levels of perceived knowledge and significantly predicted increased self-efficacy. Both stress and perceived knowledge were also significant predictors of self-efficacy. Like belief, higher ratings of perceived knowledge were related to parents having a greater degree of self-efficacy, while higher levels of stress were related to parents experiencing less self-efficacy.

The most important piece of the present analyses was the prediction of the involvement latent variable. Self-efficacy emerged as the only direct significant predictor of involvement, as the direct effects of stress and belief on involvement were not significant. Thus, while belief does not directly influence parents’ involvement, belief in IBI effectiveness indirectly influences involvement through its relationship with self-efficacy. Similarly, parents’ level of stress does not directly influence their involvement; however, parents’ stress can indirectly affect their involvement via stress’ negative impact on parents’ feelings of self-efficacy.

*Comparison of Parents’ and Therapists’ Ratings of Parents’ Involvement*

As indicated above, 64 therapists completed the therapist version of the Parent Involvement Questionnaire. When applicable, therapists answered questions regarding the mothers’ and fathers’ ratings of involvement separately. For the purpose of these analyses, the therapists’ ratings of the parent who completed the questionnaire were used (e.g., if a child’s mother indicated that she completed the Parent Involvement Questionnaire, then the therapists’ ratings of the mother’s involvement were used). Of the 64 therapist questionnaires returned, seven fathers had completed the corresponding Parent Involvement Questionnaire. Therefore, for these seven cases the therapists’ ratings of the fathers’ involvement were included in the following analyses. For the remaining 58 cases the ratings of the mothers’ involvement were used.
The items comprising each type of involvement determined in the exploratory factor analysis from the parent version of the Involvement Questionnaire were compared to similar items from the therapist version of the questionnaire (see Table 9). For each involvement type with multiple items a mean score out of five was calculated (i.e., the five formal IBI involvement items on the parent questionnaire were converted into a mean score out of five, as were the two formal IBI involvement items on the therapist questionnaire). Parents’ mean scores were then correlated with therapists’ mean scores for each of the four types of involvement. The far right hand column of Table 9 illustrates that none of the correlations between the parents’ and therapists’ ratings of Agency, Training, Formal IBI, or Child Program Involvement was significant. This suggests that parents and therapists have different perspectives on how involved the parents are in their children’s IBI programs.

Table 9

*Correlations between Parents’ and Therapists’ Ratings of Involvement*

<table>
<thead>
<tr>
<th>Parent Questionnaire items</th>
<th>Therapist Questionnaire items</th>
<th>( r )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal IBI Involvement items</td>
<td>Formal IBI sessions – communication skills</td>
<td>How often does the parent conduct formal IBI sessions with the child</td>
</tr>
<tr>
<td></td>
<td>Formal IBI sessions – self-help skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formal IBI sessions – academic skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formal IBI sessions – social/play skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hours per week conducting IBI sessions</td>
<td>Hours per week conducting IBI sessions</td>
</tr>
<tr>
<td>Child Program Involvement items</td>
<td>Generalization – social/play skills</td>
<td>How often does the parent promote the generalization of skills that the child is learning in IBI in daily life</td>
</tr>
<tr>
<td></td>
<td>Generalization –</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Description</td>
<td>Training Involvement</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Communication skills</td>
<td>Generalization – self-help skills</td>
<td>Hours of behavioural parent training courses</td>
</tr>
<tr>
<td>Generalization – academic skills</td>
<td></td>
<td>Attends conferences and parent training</td>
</tr>
<tr>
<td>Hours per week promoting generalization</td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Familiarity with child’s program goals</td>
<td></td>
<td>Hours of behavioural lectures/workshops/conferences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.26</td>
</tr>
<tr>
<td>Training Involvement</td>
<td>Hours per week involved in training activities</td>
<td></td>
</tr>
<tr>
<td>Agency Involvement</td>
<td>Watching the child in therapy sessions</td>
<td>Watching the child in therapy sessions</td>
</tr>
<tr>
<td></td>
<td>Receiving individual coaching/feedback from IBI staff</td>
<td>Has individual coaching and feedback from the IBI program staff</td>
</tr>
<tr>
<td></td>
<td>Communicating with IBI staff</td>
<td>Communicates directly with you either on the phone or in person</td>
</tr>
<tr>
<td></td>
<td>Attending review meetings/input into goal setting</td>
<td>Attends review meetings and has input into goal setting for their child</td>
</tr>
<tr>
<td></td>
<td>Completing homework provided by the IBI staff</td>
<td>Reads material and/or does homework that you give them</td>
</tr>
<tr>
<td></td>
<td>Hours per week involved in child’s IBI agency</td>
<td>Hours per week the child’s parent is involved with the IBI agency</td>
</tr>
</tbody>
</table>
CONCLUSION & RECOMMENDATIONS/NEXT STEPS

Clinicians, researchers, and experts in the autism field concur that parents’ involvement in their children’s IBI programs is beneficial and should be strongly encouraged. However, there is very limited research empirically evaluating or exploring the construct of parent involvement in IBI. Therefore, in this study I sought to: a) accurately define and measure parent involvement in IBI, b) create a model of factors predicting parent involvement, and c) explore the similarities and differences in parent and therapist reports of parent involvement.

Defining and Measuring Parent Involvement in IBI

In reference to the first objective, I successfully created a theoretically sound and statistically reliable measure of the construct, parent involvement in IBI. This first objective was achieved by conducting an EFA that yielded a four-factor model of involvement with good model-data fit. The factors in this model suggested the following four types of involvement: formal IBI involvement, child program involvement, training involvement, and agency involvement.

Formal IBI involvement contains items that focus on parents conducting formal and structured teaching sessions with their children across developmental domains (e.g., academic, social, self-help skills). Furthermore, the child program involvement items encompass parents’ efforts to promote generalization with their children across developmental areas (e.g., academic, social, self-help skills), in an attempt to determine whether the skills the children are learning in therapy are being generalized and incorporated into their daily lives. Child program involvement also assesses parents’ familiarity with their children’s specific program goals. The training involvement items pertain to parents’ participation in various IBI or behavioural training opportunities, and the agency involvement items refer to parents’ participation in various aspects
of the child’s IBI program in conjunction with the agency from which the child is receiving services.

The emergence of a four-factor model of involvement is somewhat different from what was initially anticipated. I originally included involvement items on the Parent Involvement Questionnaire that I thought could be conceptualized as one of child program, agency, or training involvement. Results of the factor analysis, however, clearly suggested that child program involvement was comprised of two separate ways parents could be involved in programming for their children; by providing opportunities for their children to generalize skills learned in therapy in naturalistic settings and by conducting formal teaching sessions.

While this four-factor model is slightly different from what was initially hypothesized, I believe it is both more comprehensive and more meaningful. It further emphasizes the importance of one of the goals of this study, which was to demonstrate that parent involvement in IBI consists of much more than parents conducting discrete trial training with their children with ASD. The distinctiveness of parents’ involvement in formal IBI sessions was further highlighted by the fact that while the other three involvement types (child program, training, and agency) were all correlated with one another, this was not the case for formal IBI involvement. Furthermore, a notable number of parents, about 25%, reported not being involved in formal IBI sessions in any capacity, despite participating in their children’s programs in other ways. Thus, it is possible that there is something unique about the families who are able to implement these formal teaching sessions, in addition to being involved in other capacities. Overall, the four-factor model of involvement, including formal IBI, child program, training, and agency involvement items, provides researchers with a comprehensive, detailed, and statistically-sound
way to obtain rich information about the ways that parents can participate in their children’s IBI education and programming.

Implications and directions for future research. By adopting a broad conceptualization of parent involvement, researchers and clinicians in the IBI field will be able to recognize the diverse ways that parents can participate in their children’s intervention programs. Acknowledging that parent involvement consists of more than parents conducting formal teaching sessions or attending parent training sessions will allow professionals to encourage and value involvement in ways that are more feasible and realistic for individual families.

Furthermore, if the ultimate goal of research about parent involvement in IBI is to demonstrate empirically whether increased involvement results in children making better progress in therapy, it is essential first to have a clearly operationalized definition of involvement. Without a proper measure of the involvement construct, it is not possible to accurately measure whether there is a relationship between parent involvement and child outcome. One study in the IBI literature, which attempted to assess the impact of parents’ involvement in IBI on children’s progress in therapy, was conducted by Sallows and Graupner (2005). In this study, senior therapists rated parents on the percentage of their involvement in the first year of their children’s treatment; however, involvement was not significantly correlated with progress. While this lack of significance is surprising, it should be noted that this study did not appear to include a validated measure of involvement. Therefore, whether there was truly no relationship between involvement and progress, or whether the lack of relationship is a product of an inadequately defined measure of involvement, is currently unclear and must be examined in future research.
Future research in this area should also include prospective longitudinal studies evaluating children’s progress in IBI programs. By including the measure of involvement developed and evaluated in the current study, researchers can systematically explore whether children’s progress, amongst other factors, is significantly influenced by parents’ involvement. If this is in fact the case, it speaks to the need for IBI programs to promote additional parent involvement opportunities and for increased funding to be devoted to the parent component of these programs (without reducing the services provided to the children). A prospective longitudinal study investigating the heterogeneous outcomes of children in IBI programs in Ontario is currently underway. The Parent Involvement Questionnaire is being used in this longitudinal research to evaluate whether parents’ participation in intervention accounts for any of the variability observed in the children’s outcomes following one year of IBI therapy (Dunn Geier, Freeman, Perry, Barrowman, & Gaines, 2008-2010).

*Predicting Parents’ Involvement in IBI*

The second objective of this study was to create a model of factors predicting parents’ involvement in IBI. Overall, my findings supported the proposed model, which posited that there are a number of factors that directly and indirectly influence parents’ involvement in their children’s programs. As hypothesized, parents who endorsed more positive changes as a result of having a child with ASD tended to report less parental stress and stronger beliefs in IBI effectiveness. Furthermore, parents with greater belief in IBI were more likely to perceive themselves as knowledgeable about autism and IBI and to have higher levels of self-efficacy regarding their abilities to be involved in their children’s programs. In addition to belief, both stress and perceived knowledge were also significant predictors of self-efficacy. Parents
experiencing less stress and parents feeling more knowledgeable were more likely to report a greater sense of self-efficacy about their involvement.

In terms of the direct prediction of involvement, it was initially hypothesized that stress, belief, and self-efficacy would all be significant predictors of parents’ involvement in their children’s IBI programs. As proposed, a direct significant relationship emerged between self-efficacy and involvement, such that parents with greater self-efficacy in their abilities to be involved were more involved in their children’s programs. This finding is in keeping with previous research that has demonstrated a strong relationship between parents’ self-efficacy and their involvement in their children’s IBI programs (Solish, 2006; Solish & Perry, 2008). Unlike self-efficacy, however, neither stress nor belief emerged as significant direct predictors of involvement in the model.

Implications. Self-efficacy’s strong prediction of involvement suggests that parents’ confidence in their delivery of therapy, how effective they think they are, and how much they feel that their involvement makes a difference to their child’s progress, are associated with a greater degree of involvement. Research on self-efficacy has shown that the more of it you have related to a particular task, the more likely you are to take on that task, try hard, persist in the face of failure, and succeed (Brehm, Kassin, & Fein, 2002). Therefore, parents who have high self-efficacy may also be parents who are more likely to become involved, and stay involved, in their children’s intervention programs. The strong association between self-efficacy and involvement is promising, because self-efficacy has been suggested to be particularly amenable to intervention and experience. This stems from Bandura’s (1997) conceptualization of self-efficacy, which proposes that self-efficacy beliefs vary across different activities, task demands, situational characteristics, context and conditions.
Hassall et al. (2005) discusses how behavioral interventions for children with challenging behaviors could be enhanced by including components that address parents’ beliefs about their own parenting capacities. Furthermore, Kuhn and Carter (2006) suggest that if parenting cognitions are associated with parenting behaviours in parents of children with autism, it may prove beneficial to design interventions that target parenting behaviour through parenting cognitions. This is in keeping with the implications and suggestions emerging from the current research. If we can work with parents to enhance their self-efficacy beliefs and feelings of competence around helping their children, we can potentially impact their level of involvement (i.e., their behaviour).

These statements by Hassall and colleagues (2005) and Kuhn and Carter (2006) speak to the importance of the IBI program staff working directly with parents to ensure that they feel confident and believe in their abilities to be involved in their children’s IBI programs. Specific strategies to enhance self-efficacy could include: IBI staff working directly with parents in order to reinforce parents for their efforts with their children, giving parents more time to practice behavioral skills with individualized coaching and supervision, respecting parents’ abilities and the contributions they make to their child’s development, and emphasizing the vital role that parents play in their children’s treatment programs rather than encouraging parents to view the IBI staff as experts who are responsible for their children’s progress. As parents feel increasingly supported by the IBI staff their confidence may increase as well. This suggestion is in line with previous research demonstrating that, for parents running their children’s IBI programs, support received from the program was a positive predictor of maternal self-efficacy (Hastings & Symes, 2002).
Findings from the current study also demonstrated that greater perceived knowledge, stronger beliefs in IBI effectiveness, and less stress were all predictive of parents experiencing more self-efficacy surrounding their involvement capabilities. Therefore, specific efforts to enhance self-efficacy can also target these factors in the hopes of directly influencing parents’ confidence and indirectly increasing their involvement. Workshops, information nights, and training sessions about autism and IBI can help parents to increase their knowledge base as well as provide them with factual information about the effectiveness of IBI for children with autism. As parents come to know more, and to believe more strongly in the potential of IBI, their self-efficacy and confidence for promoting their children’s development are likely to increase. Furthermore, creating opportunities for parents to devise realistic goals for their children in IBI programs (i.e., small, measurable achievements), may help to increase parents’ beliefs about their children’s progress in therapy and subsequently their self-efficacy. It is essential that these efforts to include parents are respectful of the heterogeneity of families participating in IBI programs, and reflect culturally-sensitive practices. Flexibility in the times and locations of such opportunities provided by the IBI agencies are vital as well.

While self-efficacy can also be increased by reducing parents’ level of distress, this is likely to be an area in which it is more challenging for IBI programs to intervene. By employing sensitivity and providing support to parents, program staff can help to make parents’ interactions with IBI programs less stressful. Moreover, as children begin to show improvement in IBI, in particular if their maladaptive behaviors begin to decrease, parents may experience a reduction in their levels of stress. However, parents’ experiences of stress may be affected by numerous factors independent of their children’s IBI program and their diagnosis of ASD. Some factors may be internal to the parents, such as mental health concerns and challenges. Furthermore,
while some of these factors may be found in the child’s microsystem (e.g., other siblings with special needs) other factors may be further removed from the child, in the exosystem (e.g., parents’ financial difficulties or job concerns). In such instances, it would be beneficial for the IBI staff to be aware of other services and supports in the community (e.g., family therapy, individual counseling) to which parents can be referred. Overall, the IBI program is likely better suited to focus its direct efforts on increasing parents’ self-efficacy, knowledge, and beliefs in IBI, rather than on decreasing parenting distress, in an attempt to enhance parental involvement in therapy.

Directions for future research. Although not directly explored in the current research, there is reason to believe that by providing support to parents, professionals can help to increase parents’ self-efficacy. As an example, Hastings and Symes (2002) found that mothers (acting as therapists for their children) who were experiencing higher levels of support from the ABA program reported higher self-efficacy. Furthermore, research by Benson and colleagues (2008) found that the extent to which teachers and other school personnel encourage, provide opportunities for, and actively support involvement was found to be the single most powerful predictor of maternal educational involvement, both at school and at home. In future research it will be important to include a measure of informal and formal supports (other than IBI) to determine whether support contributes directly or indirectly to parents’ involvement in IBI programs.

The current model hypothesized and demonstrated that self-efficacy is a significant predictor of involvement. However, longitudinal research in this area is warranted. While the measurement model in this study indicated that self-efficacy predicted involvement at one time point, a longitudinal study could demonstrate the effect of self-efficacy on involvement over
time. In addition, in future research it is necessary to explore whether a feedback loop can be added to the model that evaluates whether self-efficacy predicts involvement, which in turn fosters increased self-efficacy, and so on. This is particularly relevant in light of previous studies that have found parent involvement to be a significant predictor of self-efficacy (e.g., Kuhn & Carter, 2006). Although it may be challenging to delineate a causal relationship between self-efficacy and involvement by clearly demonstrating which comes “first”, obtaining a greater understanding of the relationship between these two variables can have important implications for where to target parent-focused interventions.

Furthermore, if research continues to demonstrate that self-efficacy is such a powerful predictor of parents’ involvement, designing and evaluating programs to enhance parents’ self-efficacy is clearly warranted. These programs should target specific areas including teaching and discussion to enhance parents’ knowledge and belief in IBI, as well as opportunities for parents to feel empowered and confident in their abilities to help their children. Evaluating such programs will be essential in determining their effectiveness and for the exploration of whether parents’ involvement increases as a result of participation.

**Comparing Parents’ and Therapists’ Perspectives of Involvement**

The third objective of this study was to explore the similarities and differences in parent and therapist reports of parent involvement. Results demonstrated that parents’ and therapists’ ratings of agency, training, formal IBI, and child program involvement were not significantly related. Although the relationships were not statistically significant, formal IBI and agency involvement were somewhat more closely related across reporters. It is reasonable to suspect that ratings of formal IBI involvement would be more similar than other types of involvement. Considering that about one-quarter of the parents were not conducting formal IBI sessions, many
parents and therapists likely agreed about the fact that these sessions were not occurring. Furthermore, if parents were actively conducting sessions, it is probable that therapists would be aware that this was occurring. Similarly, it is also reasonable that ratings of agency involvement would be more strongly related across reporters than other kinds of involvement (i.e., child program or training). If parents are participating in agency-based activities, the majority of the time the therapists would be a part of the same activities. Despite these trends toward agreement for some types of involvement, as indicated above, in general there was little or no relationship between the two perspectives. This is congruent with previous research that has also highlighted discrepancies in parents’ and therapists’ reports of parents’ involvement (e.g., Gavidia-Payne & Stoneman, 1997; Solish & Perry, 2008).

**Implications.** The lack of agreement between reporters suggests that parents and therapists have notably different perspectives on how involved parents are in their children’s IBI programs. The focus of these findings is not to determine whose report is correct or more accurate, but rather to acknowledge the implications that come along with these discrepant perspectives of parents’ involvement. These results emphasize the need for professionals to employ sensitivity when working with parents, and to be mindful of the fact that parents and professionals may not perceive things in an identical manner. While parents may believe that they are quite involved in aspects of their children’s programs, when therapists compare a particular family’s involvement to that of other families they work with, the parents in question may seem relatively uninvolved. Therefore, it is essential to clearly articulate and clarify expectations about parent involvement. It is also important to take individual family circumstances into account and to tailor expectations of involvement accordingly. Moreover, respecting family preferences for involvement is critical (Wehman, 1998). Professionals should
be mindful to interact with parents in ways that enhance parents’ self-esteem and sense of control over their situation (Perry, 2004).

**Directions for future research.** Future research should continue to explore the similarities and differences in therapist and parent report. Collecting qualitative data from both parties focusing on these discrepancies would enrich our understanding of parents’ and therapists’ differing perspectives, as well as the effects of such differences on parents’ abilities and willingness to be involved in their children’s IBI programs. Also relevant to explore is whether these differing views impact the parent-therapist relationship. Obtaining a better understanding of the areas in which parents and therapists agree and disagree about involvement could facilitate productive conversations about ways to bridge such discrepancies.

In addition, revisions to the therapist questionnaire are indicated, including making the therapist questions about involvement more comparable to the four-factor model of involvement devised from the parent questionnaire. Once involvement items are more equivalent across the therapist and parent questionnaires, it will be important to reexamine the similarities and differences between reporters.

**Limitations and General Directions for Future Research**

Although this study makes a unique contribution to the literature and explores an important, yet under-researched area, it was not without limitations. Firstly, the response rate was quite low, about 15%, and thus there is the possibility that there is something unique about the families who decided to participate in this research, in particular that they may be exceptionally committed to IBI. Thus, my findings may not be generalizable to all families with children participating in IBI programs. However, it is important to recognize that the sample was diverse in a number of ways. The parents who participated in this research had a wide range of
education and employment experiences, were quite ethnically diverse, were from different areas of the province (both rural and urban), and had children of varying ages and developmental levels. Furthermore, it should also be acknowledged that there were a range of scores on each of the involvement subscales, and therefore the families who participated were not exclusively those who were extremely involved in their children’s programs.

The current study was also limited by a modest sample size, and thus it is important to replicate and further expand this research with a larger number of families. With a greater number of participants, the results of the multivariate statistical analyses can be interpreted with greater confidence as findings would be more robust. A larger sample size would also allow, if deemed appropriate, for the removal of participants with missing data rather than relying on techniques to impute this data. In future research with more participants, additional predictors could be included in the model (e.g., social support, socioeconomic status, child variables), and more fine grained analyses could be conducted (e.g., by separating the families who received public funding as compared to private funding options, or families receiving home-based as compared to centre-based programming). Finally, obtaining more data could afford the possibility of separating mothers’ and fathers’ responses. Previous research has suggested that different patterns of results have emerged based on information provided independently by mothers and fathers (e.g., Diamond, 2005; Gavidia-Payne & Stoneman, 1997; Hastings & Brown, 2002; Trute et al., 2007), and therefore it is important to explore such potential distinctions in models of factors predicting parents’ involvement in IBI.

Another limitation of the current study involves the information obtained about the children from their clinical files. Because of my study’s design, I needed information about the children’s functioning from when they began receiving IBI services. I received these data from
staff working at the participating agencies, however many of the files were incomplete and lacking relevant information, and some of the parents did not consent for me to access this information at all. Furthermore, I was not able to acquire adequate information about the child’s severity of autistic symptomatology at intake, because DSM-IV diagnoses and autism severity scores were not used consistently across regions. Thus, although I obtained reliable information about the developmental level of some of the children through cognitive and adaptive measures, there was a notable amount of missing data. Despite results from my previous work (Solish, 2006; Solish & Perry, 2008), as well as results from the current study that suggest that the child variables do not significantly impact parents’ involvement, it is nevertheless important to reexamine this finding with more complete and comprehensive information about the children themselves. This would ideally include accurate information about the child’s diagnosis, cognitive and adaptive abilities, and maladaptive behaviours.

As discussed in the section above comparing parent and therapist data, some changes to the therapist questionnaire are indicated. Although I do not believe this is the case, it is possible that the lack of agreement between parents’ and therapists’ reports of involvement is a product of the differences in the involvement items across versions of the questionnaire. Therefore, in future research it will be important to reexamine the similarities and differences between reporters after making the necessary changes to the involvement items on the therapist questionnaire. Establishing more consistent wording for the parent and therapist open-ended questions is also indicated.

*General Summary and Conclusion*

The ultimate goal of research in this area is to determine whether increased parental involvement in their children’s IBI programs results in children making greater progress in
therapy; something that is believed to be true clinically, but has yet to be demonstrated by empirical research. The current study uniquely contributed to this goal as I devised a conceptually meaningful and statistically reliable measure of involvement that can be used in future research. Furthermore, the model presented in the current study furthers our understanding of what factors may affect parents’ abilities to be involved in intervention. Results suggest that of the utmost importance for promoting involvement, is helping parents to increase their self-efficacy and confidence about their abilities to be involved. Additionally, working with parents to help them feel more knowledgeable about autism and IBI, develop stronger beliefs in the intervention, and reduce their parental distress, may ultimately lead to their increased involvement as well. Thus, when professionals encourage parents to participate in their children’s programming it is important to take these variables, particularly self-efficacy, into account. Intervening directly only at the level of involvement, by telling parents to attend review meetings, promote generalization, communicate with therapists, and so on, may not be effective or realistic. Rather, intervening in ways that enhance involvement’s predictors, providing services and supports for parents with children in IBI programs, may be a more successful and reasonable alternative.

Also highlighted in this study were the differing perspectives of parents and therapists about how involved parents are in their children’s IBI programs. This discrepancy emphasizes the need for increased communication between the two groups. However, unlike the objective responses about parental involvement, parents’ and therapists’ responses to open-ended questions about factors facilitating or detracting from parents’ involvement, showed some similarities. A number of the factors that parents identified as making it more difficult to be involved in their children’s IBI programs are not easily changed (e.g., being a single parent or
having other children with special needs). Furthermore, many of the factors are well beyond the control of the IBI program staff (e.g., parents having supportive family and friends, good financial stability, and a flexible work environment). However, results from this research clearly suggest that there are factors, namely self-efficacy, that are known to be modifiable and responsive to intervention, which can directly impact parents’ involvement. Therefore, it is the responsibility of professionals in the IBI field to ensure that active efforts are made to enhance parents’ confidence in their abilities to participate in their children’s intervention programs. Future research must then evaluate whether these efforts are successful at increasing parents’ involvement, and ultimately, whether parents who are more involved have children who make greater progress in IBI programs.

KNOWLEDGE EXCHANGE PLAN

This research has been presented at the following 4 venues:


In addition, a summary letter was sent to all participating families and agencies.

Future knowledge exchange activities include:
- A poster presentation at the Society for Research in Child Development Conference in 2011
- A presentation for interested staff at Holland Bloorview Kids Rehabilitation Hospital
References


Appendix A

Parent Involvement Questionnaire

Participating agency:

Parent Involvement Questionnaire – Parent Version

This questionnaire has several different sections. Each section has its own set of instructions. The first section is included to help us to understand the background of individuals who agree to participate in our study. In the case of a two parent family, one person can fill out the information for both partners. If at any point throughout the questionnaire you feel that a question does not apply to you, please feel free to write not applicable (n/a). If you write n/a we would appreciate if you could tell us why the question is not applicable. Feel free to add other comments if you wish.

Date questionnaire completed: _______________________

♦ Completed by/relationship to child:
  □ Mother
  □ Father
  □ Male guardian
  □ Female guardian

♦ What is your family constellation?
  □ Married/Common Law
- What is your (and your partner’s) country of birth?
  Mother/female guardian ________  Father/male guardian ______________________
- If applicable, what is your (and your partner’s) date of entry into Canada?
  Mother/female guardian ____________________  Father/male guardian ___________
- What is your (and your partner’s) first language?
  Mother/female guardian ____________  Father/male guardian ____________________
- What language(s) do you speak in the home?  □ English
4. Attend review meetings and have input into goal setting about your child's IBI program?

1 2 3 4 5
never sometimes frequently
(on some occasions) (on every possible occasion)

5. Read material and do homework given to you by the IBI staff?

1 2 3 4 5
never sometimes frequently
(on some occasions) (on every possible occasion)

6. Please provide your best estimate of how many hours per week you are involved with your child's IBI agency:

0 1-3 3-5 5-7 7 or more

_Keeping your answers to questions 1-6 in mind, please answer questions 7-10_

7. How difficult do you find it to be involved in your child's IBI agency?

1 2 3 4 5
not at all moderately extremely

8. How effective do you think you are at being involved in your child's IBI agency?

1 2 3 4 5
not at all moderately extremely

9. How confident do you feel being involved in your child's IBI agency?

1 2 3 4 5
not at all moderately extremely

10. How much do you feel your involvement in your child's IBI agency makes a difference in his/her progress?

1 2 3 4 5
not at all moderately extremely

_Training Involvement_

_Questions 11-16 refer to your involvement in training activities related to autism and IBI. Please indicate how often you do the following things:_

11. Have individual coaching and feedback from your child's IBI program staff?

1 2 3 4 5
never sometimes frequently
(at least monthly) (at least weekly)

12. Seek out information about autism and IBI (e.g., searching the internet, going to the library, reading articles, etc.)?

1 2 3 4 5
13. How many hours of behavioural parent training courses have you attended (e.g., a course with other parents and a group leader, such as Jumpstart, where parents are taught behavioural principles like reinforcement, prompting, and task analysis)?

0  1-10  11-20  21-30  31 or more

14. How many hours of behavioural lectures, presentations, workshops, and/or conferences have you attended (e.g., where you have been taught advanced behavioural techniques, or you have learned about research on behavioural intervention)?

0  1-10  11-20  21-30  31 or more

15. How many formal university/college courses have you taken about autism or IBI?

1  2  3  4  5
none one complete formal degree, diploma semester course or certificate in related field

16. Please provide your best estimate of how many hours per week you are involved in training related to autism and IBI:

0  1-3  3-5  5-7  7 or more

Keeping your answers to questions 11-16 in mind, please answer questions 17-20

17. How difficult do you find it to be involved in training activities about autism and IBI?

not at all  2  3  4  5
moderately extremely

18. How effective do you think you are at being involved in training activities about autism and IBI?

not at all  2  3  4  5
moderately extremely

19. How confident do you feel being involved in training activities about autism and IBI?

not at all  2  3  4  5
moderately extremely

20. How much do you feel your involvement in training activities about autism and IBI makes a difference in his/her progress?

not at all  2  3  4  5
moderately extremely

Child Program Involvement
In this next section we are going to ask whether you do formal IBI sessions with your child in specific areas. Some parents do formal IBI sessions using exactly the same methods as the staff. Other parents try to work on the same skills in a more naturalistic way in every day life to promote generalization of the skills. Some parents do both and some do neither. For questions 21-31 please indicate how often you do the following:

*Remember…

**Formal IBI sessions** = structured teaching with specific instructional goals and some form of data collection

**Generalization** = using IBI principles to teach the same goals but in a flexible way and/or in every day situations

**Academic Skills**

21. To what extent do you do formal IBI sessions focusing on your child’s academic skills? (e.g., letter identification, counting, printing, math, reading, etc. in a structured teaching situation)

   1 never  2  3 sometimes  4  5 frequently  n/a

22. To what extent do you try to generalize your child’s academic skills? (e.g., if you at the grocery store and you are working on counting do you ask your child to put 5 apples into a bag?)

   1 never  2  3 sometimes  4  5 frequently  n/a

**Social and Play Skills**

23. To what extent do you do formal IBI sessions focusing on your child’s social and play skills? (e.g., turn-taking, sharing, asking another child to play in a structured teaching situation)

   1 never  2  3 sometimes  4  5 frequently

24. To what extent do you try to generalize your child’s social and play skills? (e.g., if turn-taking is your goal and you are at the park and another child is on the slide do you help encourage your child to wait his/her turn to go down the slide?)

   1 never  2  3 sometimes  4  5 frequently

**Communication Skills**

25. To what extent do you do formal IBI sessions focusing on your child’s communication skills? (e.g., requesting, labeling, responding to questions, following directions, etc. in a structured teaching situation)

   1 never  2  3 sometimes  4  5 frequently

26. To what extent do you try to generalize your child’s communication skills? (e.g., if you have been working on labeling do you encourage your child to ask for the items he/she wants at dinner time)
27. To what extent do you do formal IBI sessions focusing on your child’s self-help skills? (e.g., toileting, dressing, tooth-brushing, etc. in a structured teaching situation)

1  never  2  sometimes  3  4  5  frequently

28. To what extent do you try to generalize your child’s self-help skills? (e.g., if you are working on a toileting program do you encourage your child to follow the same routine when using the toilet in a variety of locations?)

1  never  2  sometimes  3  4  5  frequently

29. Please provide your best estimate of how many hours per week you are implementing formal IBI sessions:

0  1-3  4-6  7-9  10 or more

30. Please provide your best estimate of how many hours per week you are deliberately generalizing skills that your child is working on:

0  1-3  4-6  7-9  10 or more

31. How familiar are you with your child’s specific IBI program goals? (e.g., if your child is working on a colors program, would you be familiar with which specific colors he/she had mastered and which ones he/she is still trying to acquire)?

1  not at all  2  moderately  3  4  5  extremely

32. How difficult do you find it to conduct formal IBI sessions with your child?

1  not at all  2  moderately  3  4  5  extremely  n/a

33. How effective do you think you are at conducting formal IBI sessions with your child?

1  not at all  2  moderately  3  4  5  extremely  n/a

34. How confident do you feel conducting formal IBI session with your child?
35. How much do you feel your involvement in formal IBI sessions with your child makes a difference in his/her progress?

1  2  3  4  5  n/a
not at all   moderately   extremely   I do not implement formal sessions

Generalization

36. How difficult do you find it to promote generalization of skills your child is learning in IBI into daily life?

1  2  3  4  5  n/a
not at all   moderately   extremely   I do not promote generalization

37. How effective do you think you are at promoting generalization of skills learned in IBI into daily life?

1  2  3  4  5  n/a
not at all   moderately   extremely   I do not promote generalization

38. How confident do you feel promoting generalization of skills into daily life?

1  2  3  4  5  n/a
not at all   moderately   extremely   I do not promote generalization

39. How much do you feel your involvement in promoting generalization of skills into daily life makes a difference in your child’s progress?

1  2  3  4  5  n/a
not at all   moderately   extremely   I do not promote generalization

Problem Behaviours

40. If your child has problem behaviours (e.g., tantruming, self-injury, aggression), to what extent do you try to handle them in the same manner as the IBI program staff do?

1  2  3  4  5  n/a
never   moderately   frequently   child has no problem behav.
41. How difficult do you find it trying to handle problem behaviours in the same manner as the IBI staff do?

1 2 3 4 5                          n/a
never  sometimes  frequently  child has no problem behav

42. How effective do you think you are at handling problem behaviours in the same manner as the IBI staff do?

1 2 3 4 5                          n/a
never  sometimes  frequently  child has no problem behav

43. How confident do you feel in your ability to handle problem behaviours in the same manner as the IBI staff do?

1 2 3 4 5                          n/a
never  sometimes  frequently  child has no problem behav

44. How much do you feel your involvement in handling problem behaviours in the same way as the IBI staff do makes a difference in your child’s progress?

1 2 3 4 5                          n/a
never  sometimes  frequently  child has no problem behav

For questions 45 and 46, please use the following criteria to rate your child’s abilities:

• 1 (low) = nonverbal and delays in all areas
• 3 (medium) = some language and delays in many areas
• 5 (high) = verbal and some skills on par with children his/her age

45. How would you rate your child’s functioning when he/she entered the IBI program?

low medium high

46. How would you rate your child’s functioning now?

low medium high

47. Your child’s level of functioning could change (up or down) for many reasons (e.g., IBI, other interventions, natural developmental changes, etc.) To what extent would you say that the change in your child’s functioning, if any, is related to your child’s participation in an IBI program?

1 2 3 4 5                          n/a
not at all  moderately  extremely  no change

For questions 48-52 please circle the number/statement that best corresponds with your child’s progress:
48. How would you rate your child’s improvement in **social and play skills** since the IBI program began?

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<td>got worse</td>
<td>no improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>substantially improved</td>
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49. How would you rate your child’s improvement in **academic skills** since the IBI program began?

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<td>got worse</td>
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50. How would you rate your child’s improvement in **communication skills** since the IBI program began?

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<td>got worse</td>
<td>no improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
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51. How would you rate your child’s improvement in **self-help skills** since the IBI program began?

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<td>got worse</td>
<td>no improvement</td>
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<td>somewhat improved</td>
<td>substantially improved</td>
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52. How would you rate your child’s improvement in **problem behaviours** since the IBI program began?

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<td>slightly improved</td>
<td>somewhat improved</td>
<td>substantially improved</td>
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**PART III**

*For questions 53-65 please use the following rating scale to circle the statement that best corresponds with your belief:*

SA = **Strongly Agree**  A = **Agree**  NS = **Not Sure**  D = **Disagree**  SD = **Strongly Disagree**

53. I believe that IBI is a major breakthrough in the treatment of autism.  
SA  A  NS  D  SD

54. I am convinced that IBI will turn out to be another false miracle like other “miracle cures” for autism.  
SA  A  NS  D  SD

55. I believe that IBI is likely to result in permanent improvement for children with autism.  
SA  A  NS  D  SD

56. I feel comfortable with the procedures and techniques used in IBI therapy.  
SA  A  NS  D  SD

57. I am skeptical about ‘success stories’ that I hear about the use of IBI for children with autism.  
SA  A  NS  D  SD

58. I believe that IBI helps children with autism to improve more than any other form of intervention.  
SA  A  NS  D  SD
59. No matter what, I will always continue to use behavioural principles with my child with autism.  
60. I intend to continue to pay for IBI for my child with autism even when/if public funding becomes unavailable.  
61. I believe that IBI will help my child to develop better social and play skills.  
62. I believe that IBI will help my child to develop better academic skills.  
63. I believe that IBI will help my child to develop better communication skills.  
64. I believe that IBI will help my child to develop better self-help skills.  
65. I believe that IBI will help to eliminate or reduce my child's problem behaviour (e.g., tantruming, self-injury, and/or aggression)  

PART IV

We understand that raising a child with autism can be a challenge for parents, and can lead to a variety of both positive and negative feelings/consequences. Please answer the following two sets of questions.

For questions 66-95 please use the same rating scale as in the previous section:

SA = Strongly Agree        A = Agree        NS = Not Sure          D = Disagree       SD = Strongly Disagree

66. I often have the feeling that I cannot handle things very well.  
67. I find myself giving up more of my life to meet my children’s needs than I ever expected.  
68. I feel trapped by my responsibilities as a parent.  
69. Since having this child, I have been unable to do new and different things.  
70. Since having a child, I feel that I am almost never able to do things that I like to do.  
71. I am unhappy with the last purchase of clothing I made for myself.  
72. There are quite a few things that bother me about my life.  
73. Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).  
74. I feel alone and without friends.  
75. When I go to a party, I usually expect not to enjoy myself.  
76. I am not as interested in people as I used to be.  
77. I don’t enjoy things as I used to.
The following statements express how some parents feel they have been CHANGED through the experience of parenting a child with special needs. Please use the same rating scale as above:

78. I have learned to speak out for my child  SA  A  NS  D  SD
79. I have learned that I can achieve rather than feel powerless  SA  A  NS  D  SD
80. I am more compassionate toward others  SA  A  NS  D  SD
81. I have made a career change, which has lead to greater vocational satisfaction  SA  A  NS  D  SD
82. I am stronger as a person  SA  A  NS  D  SD
83. I am more confident  SA  A  NS  D  SD
84. I take better care of myself  SA  A  NS  D  SD
85. I have stronger spiritual convictions now (e.g., personal spirituality, faith in god)  SA  A  NS  D  SD
86. I have made many close friends with people I would have never met otherwise  SA  A  NS  D  SD
87. I have learned to see life from a different perspective (learned what it is like to live in someone else’s shoes)  SA  A  NS  D  SD
88. I have made a difference in the lives of other people (through advocacy/promoting changes)  SA  A  NS  D  SD
89. I make the most out of each day rather than living for the future  SA  A  NS  D  SD
90. I celebrate life more now (rather than just merely surviving day to day)  SA  A  NS  D  SD
91. I have a different and more authentic view of what it means to be successful in life  SA  A  NS  D  SD
92. I have learned what is really important and valuable in life  SA  A  NS  D  SD
93. I have developed new skills that have helped me to do a better job in my career/vocation  SA  A  NS  D  SD
94. I have developed attitudes that have helped me to do a better job in my chosen career/vocation  SA  A  NS  D  SD
95. My marriage has emerged stronger  SA  A  NS  D  SD

96. How would you rate your stress level **before** your child started his/her IBI program?

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<td></td>
<td>low</td>
<td>medium</td>
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97. How would you rate your stress level **now**?

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<tr>
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<td>low</td>
<td>medium</td>
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<td>high</td>
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</table>
98. People’s stress levels may change (up or down) for many reasons (e.g., financial problems, death in the family, increase in supports available, exciting child accomplishments). To what extent would you say that your change in stress level, if any, is related to your child’s participation in an IBI program?

1  2  3  4  5      n/a
not at all               moderately         extremely      no change

PART V

99. Compared to the general population, how would you rate your knowledge about autism as a developmental disorder?

1          2          3          4          5
low         medium             high

100. Compared to the general population, how would you rate your knowledge about the principles of IBI?

1          2          3          4          5
low         medium             high

Autism
Please circle either “True” (T) or “False” (F) for questions 101-111. We encourage you to make your best guess, but if you are completely unsure of an answer you may circle “Don’t Know” (DK)

101. Autism is an extremely rare disorder.     T         F            DK
102. The earliest signs of autism include poor response to being called by name and lack of pointing.     T         F            DK
103. Children with autism are good at understanding the thoughts, feelings, and intentions of other people.     T         F            DK
104. Children with autism do not always, but may, have intellectual disability. .    T         F            DK
105. Autism affects children of all racial, ethnic and social class backgrounds with equal frequency.    T         F            DK
106. Children with autism range from being nonverbal to being verbal. T         F            DK
107. Autism involves a qualitative impairment in communication and social interaction, but no stereotyped or repetitive behaviours. T         F            DK
108. Children with autism are known to have a wide variety of interests and good social skills.     T         F            DK
109. Children with autism may communicate using sign language or pictures.                T         F            DK
110. Children with autism usually engage in play that looks like that of other children their age.     T         F            DK
**IBI**

*Please circle either “True”(T) or “False”(F) for questions 111-120. We encourage you to make your best guess, but if you are completely unsure of an answer you may circle “Don’t Know”(DK)*

111. After a child has mastered a task with prompting, prompts should be faded so that the child can eventually demonstrate the skill independently. T F DK

112. In IBI it is often best to teach the child a complex task by breaking it down into parts rather than teaching the task as a whole. T F DK

113. Some research has shown that 10 hours of a IBI a week is just as effective 20 hours per week. T F DK

114. IBI is based on behavioural principles of learning sometimes known as applied behaviour analysis. T F DK

115. Reinforcement of successive approximations to a desired target behaviour is known as fading. T F DK

116. All of the following are types of IBI: Pivotal Response Training, Floor Time, Discrete Trial Training, and Verbal Behaviour. T F DK

117. Some children with autism who receive 40 hours of IBI a week early in life will still not show substantial improvement. T F DK

118. In IBI, you should not vary the teaching materials or the wording of the instruction because this will just confuse the child. T F DK

119. The following terms are techniques of IBI: Reinforcement, Shaping, Fading, and Prompting. T F DK

120. At the start of therapy most children respond just as well to praise (e.g., someone saying “good job!”) as to tangible reinforcers or rewards (e.g., candy). T F DK

**Additional Questions**

1) Please comment on what things about your personal and family situation make it easier for you to be involved in your child's IBI program? (i.e., support from extended family or friends, financial resources, etc.)
2) Please comment on what things about your personal and family situation make it more difficult for you to be involved in your child's IBI program? (i.e., other stressful events at home, lack of support system, etc.)

Thank you very much for taking the time to complete this questionnaire!

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Appendix B

Parent Involvement Questionnaire – Therapist Version

Participant number ____________

Parent Involvement Questionnaire – Therapist Version

This questionnaire has several different sections. Each section has its own set of instructions. The first section will provide us with some background information about you and your experience in the IBI field. The remaining questions are about the family that you are currently working with. Some questions ask you to rate the mother/female guardian and father/male guardian separately. If you work with a single-parent family then please leave the other parent blank. However, if you work with a two-parent family, please try your best to rate both parents, even if you do not know one of them very well. If you feel that a question does not apply to you and/or the family that you work with please write n/a.

Therapist General Information

• What is your role? □ Senior therapist (ST)
  □ Instructor therapist (IT)
  □ Other (please specify) ___________________________________

• How long have you been working in the IBI field? ________________

• How many families of children with autism have you worked with? ________________

• How long have you been working with the family in question? ________________

PART I

For questions 1-5a please use the rating scale below to answer how often the mother and/or father of the child with autism does each of the following:

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<tbody>
<tr>
<td>never</td>
<td>once per week</td>
<td>daily</td>
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<tr>
<td>1) Communicates directly with you either on the phone or in person</td>
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<td>2) Reads and writes in their child’s communication book</td>
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<tr>
<td>3) Does formal IBI sessions with her/his child</td>
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<td>4) Promotes the generalization of skills that the child is learning in IBI in daily life</td>
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<td>5a) * If home-based, watches her/his child in therapy sessions</td>
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Mother/female guardian | Father/male guardian

1 2 3 4 5 | 1 2 3 4 5
1 2 3 4 5 | 1 2 3 4 5
1 2 3 4 5 | 1 2 3 4 5
1 2 3 4 5 | 1 2 3 4 5
1 2 3 4 5 | 1 2 3 4 5
For questions 5b-10 please use the rating scale below to answer how often the mother and/or father of the child with autism does each of the following:

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<tr>
<td></td>
<td>never</td>
<td>on some occasions</td>
<td>on every possible occasion</td>
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<td>Mother/female guardian</td>
<td>Father/male guardian</td>
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5b) * If centre-based, watches her/his child in therapy sessions

6) Attends review meetings and has input into goal setting for their child

7) Reads material and/or does homework that you give them

8) Attends conferences and parent training sessions

9) Has individual coaching and feedback from the IBI program staff

10) Tries to handle problem behaviours in the same manner as the IBI staff

11) Please provide your best estimate of how many hours per week the child’s **mother/female guardian** is involved with the IBI agency:

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<td>1-3</td>
<td>3-5</td>
<td>5-7</td>
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12) Please provide your best estimate of how many hours per week the child’s **father/male guardian** is involved with the IBI agency:

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13) Please provide your best estimate of how many hours per week the child’s **mother/female guardian** implements formal IBI sessions with her child:

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<td>3-5</td>
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14) Please provide your best estimate of how many hours per week the child’s **father/male guardian** implements formal IBI sessions with his child:

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15) Please provide your best estimate of how many hours per week the child’s **mother/female guardian** works on deliberately generalizing skills that her child is learning in therapy:
16) Please provide your best estimate of how many hours per week the child’s father/male guardian works on deliberately generalizing skills that his child is learning in therapy:

0  1-3  4-6  7-9  10 or more

17) How familiar would you say the child’s mother/female guardian is with her child’s specific IBI program goals?

1 not at all  2  3 somewhat  4  5 extremely

18) How familiar would you say the child’s father/male guardian is with his child’s specific IBI program goals?

1 not at all  2  3 somewhat  4  5 extremely

For questions 19 and 20 please use the rating scale below to answer the following:

1 not at all  2  3 somewhat  4  5 extremely

Mother/female guardian  Father/male guardian

19) How effective is the child’s parent at implementing the principles of IBI?

1  2  3  4  5

20) How confident do you believe the child’s parent is in their ability to implement the principles of IBI?

1  2  3  4  5

PART II

For questions 21 and 22, please use the criteria below to rate the child’s abilities:

• 1 (low) = nonverbal and delays in all areas
• 3 (medium) = some language and delays in many areas
• 5 (high) = verbal and some skills on par with children his/her age

Although you may not have known each child at the start of his/her intervention, based on your current knowledge (from the child’s treatment file and/or through speaking with other staff) please provide us with your best estimate for the following:
21) How would you rate the child’s functioning when he/she entered the program?

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<td>low</td>
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22) How would you rate the child’s functioning now?

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<td></td>
<td>low</td>
<td>medium</td>
<td>high</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23) How would you rate the child’s improvement in social and play skills since the IBI program began?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>got worse</td>
<td>improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>extremely improved</td>
<td></td>
</tr>
</tbody>
</table>

24) How would you rate the child’s improvement in academic skills since the IBI program began?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>got worse</td>
<td>improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>improved</td>
<td></td>
</tr>
</tbody>
</table>

25) How would you rate the child’s improvement in communication since the IBI program began?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>got worse</td>
<td>improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>improved</td>
<td></td>
</tr>
</tbody>
</table>

26) How would you rate the child’s improvement in self-help skills since the IBI program began?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>got worse</td>
<td>improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>improved</td>
<td></td>
</tr>
</tbody>
</table>

27) How would you rate the child’s improvement in problem behaviours since the IBI program began?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>got worse</td>
<td>improvement</td>
<td>slightly improved</td>
<td>somewhat improved</td>
<td>extremely improved</td>
<td>child has no prob behav</td>
<td></td>
</tr>
</tbody>
</table>

**PART III**

28) How strongly would you say the child’s mother/female guardian believes in IBI as the intervention of choice for her child?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>somewhat</td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

29) How strongly would you say the child’s father/male guardian believes in IBI as the intervention of choice for his child?
PART IV

For questions 30-32 please use the rating scale below to answer the following:

1  not at all  2  somewhat  3  moderately  4  extremely  5 extremely  n/a
did not know

Mother/female guardian  Father/male guardian

30) If you knew the parent at intake, how stressed did this parent seem?
1  2  3  4  5  1  2  3  4  5

31) How stressed does the parent seem now?
1  2  3  4  5  1  2  3  4  5

32) To what extent would you say that a change in the parent’s stress level, if any, is related to their child’s participation in an IBI program?
1  2  3  4  5  1  2  3  4  5

PART V

For questions 33 and 34 please use the rating scale below to answer the following:

1  low  2  medium  3  high

Mother/female guardian  Father/male guardian

33) How would you rate the parent’s knowledge of autism?
1  2  3  4  5  1  2  3  4  5

34) How would you rate the parent’s knowledge of IBI?
1  2  3  4  5  1  2  3  4  5

35) Please comment on any other parent or family factors which you believe positively affect the quality of IBI that the child receives (i.e., support from extended family or friends, financial resources, etc.)

Mother/female guardian:_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Father/male guardian:_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
36) Please comment on other parent or family factors which you believe detract from/negatively affect the quality of IBI that the child receives (i.e., other stressful events at home, lack of support system, etc.)

Mother/female guardian:

_____________________________________________________

__________________________________________________________________________

Father/male guardian:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Thank you for taking the time to complete this questionnaire!!