INVESTIGATING THE SURVIVABILITY OF AN ECOLOGICAL, FAMILY-CENTERED POSITIVE BEHAVIOUR SUPPORT INTERVENTION WITH A FAMILY OF A CHILD WITH A DEVELOPMENTAL DISABILITY AND PROBLEM BEHAVIOUR

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ABSTRACT

The purpose of this study was to replicate the work of Lucyshyn et al. (2011) and Binnendyk (2009) by investigating the survivability of an intervention based upon an ecological, family-centered positive behaviour support approach to assessment and intervention. The approach integrates child behaviour, parent-child interaction, and family activity settings into an ecological unit of analysis aimed at improving child behaviour, parent-child relationships, and promoting meaningful changes in the functioning of the family. One family of a child with autism and problem behaviour participated. Two home-based family routines were targeted for assessment and intervention. A quasi-experimental, multiple baseline design across two family routines was used to evaluate the association between implementation of the intervention and child behaviour. Results documented substantial improvements at the point of intervention in child problem behaviour and routine steps successfully completed in the two family routines. These improvements maintained up to 8 months post-intervention. Sequential analysis methods were used to examine changes in parent-child interaction across baseline and intervention conditions. Results offer robust, categorical evidence of the transformation of coercive processes of parent-child interaction into constructive processes of interaction following implementation of the intervention. Social validity and goodness-of-fit results indicated that the intervention was acceptable and contextually appropriate within the ecology of the family. A high level of parent implementation fidelity was sustained across the intervention and follow-up phases. Despite positive outcomes, meaningful improvements in family functioning were not reported. Results are discussed in terms of contributions and relationship to the literature, implications, cautions and limitations, and future research.
PREFACE

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Dedicated to the memory of my mother, Linda Chinn.
CHAPTER ONE

Introduction

Problem Behaviour and Children with Developmental Disabilities

A challenge that faces many families of children with developmental disabilities is that their children often engage in problem behaviour. Physical aggression, negative vocalizations, destructive or dangerous behaviour, noncompliance, and self-injurious behaviour are all examples of behaviour problems that diminish the well-being of both the children and their families.

Children with developmental disabilities are at an increased risk for developing problem behaviour in comparison to typically developing children (Baker, Blancher, Crnic, & Edelbrock, 2002; Crnic, Hoffman, Gaze, & Edelbrock, 2004). Baker et al. (2002) reported that 3-year-old children with developmental delays were 3 to 4 times as likely to have behaviour problems in the clinical range (24 – 26.1% of children with delays) than children without delays (5.6 – 8.3% of children without delays). The prevalence of problem behaviour in this population varies depending on the criteria used to define the challenging behaviour and which disabilities are included in the analyses. Parents in a study by Feldman, Hancock, Rielly, Minnes, and Cairns (2000) reported that 42% of their children displayed problem behaviour and 25% of the children were rated within the clinical range for behaviour problems. Lecavalier (2006) examined the relative prevalence of specific behaviour problems (e.g., argues, temper tantrums, bites self) in students between 3 and 21 years of age with Pervasive Developmental Disorders. Results indicated that high rates of behaviour and emotional problems were present in this population; 8 – 13% of the sample presented with severe behaviour disturbances. Other researchers have shown that problem behaviour
emerges early in the lives of children with developmental disabilities and remains persistent and pervasive over time (Green, O'Reilly, Itchon, & Sigafoos, 2005; Horner, Carr, Strain, Todd, & Reed, 2002; Roberts, Mazzucchelli, Taylor, & Reid, 2003). Problem behaviour has a negative impact on the quality of life of children with developmental disabilities. Problem behaviour raises concerns regarding the health and welfare of these children; for example, a history of violent tantrums (i.e., falling to the floor and head-banging) in response to basic parent demands (e.g., asking the child to share a toy) puts the safety of the child with developmental disabilities at risk. Engaging in these behaviours can lead to the restriction or elimination of the child’s educational, social, and community participation (Carr, 2007; Horner et al., 2002). As noted by Lucyshyn, Horner, Dunlap, Albin, and Ben (2002), “He or she may be exposed to fewer natural learning opportunities, become isolated from family and peers, or experience little involvement in community life” (p. 5).

**Problem Behaviour and the Family**

Parents of children with developmental disabilities also experience an array of negative effects on their quality of life when their children engage in problem behaviour (Mungo, Ruta, D'Arrigo, & Mazzone, 2007). Examples include parental mental health problems, family functioning concerns, and social isolation.

Child developmental disability and problem behaviour are associated with parent psychological distress, stress (Herring et al., 2006; Lecavalier, Leone, & Wiltz, 2006) and depression (Hastings et al., 2005) in particular. Parents of 3-year-old children with developmental delays reported higher levels of stress than parents of typically developing children; child problem behaviour accounted for the increased levels of stress more than any
other factor (Baker et al., 2002). Schieve, Blumberg, Rice, Visser, and Boyle (2007) reported findings from the 2003 National Survey of Children’s Health (Child and Adolescent Health Measurement Initiative, 2003) which indicated that 55% of participating parents of children with autism, in comparison to 11% of parents without special health care needs, reported high levels of aggravation in three areas: (a) feeling their child was harder to care for than most same-age children, (b) being bothered by things their child does, and (c) giving up more of their life than expected to meet their child’s needs. Floyd and Gallagher (1997) collected parent data comparing children with mental retardation, chronic illness, and a non-disabled group and found that the presence of problem behaviour in these children, not their diagnosis, was a determinant of parent stress and their family’s predicted use of mental health services.

Benson (2006) examined how the severity of the deficits and behavioural problems of autism spectrum disorder in children affected the moods of their parents. Sixty-eight parents were surveyed; 45% of the sample reported scores that warranted clinical diagnoses of depression. The study also looked at how child symptom severity contributed to the creation of stress in other areas of family functioning (e.g., family relationships, finances, community involvement). Severe symptoms increased the impact of additional stressors on parents’ lives, contributing to their high levels of reported depression. Problem behaviour in children with developmental disabilities has also been associated with family dysfunction (Herring et al., 2006), financial burdens (Baker et al., 2002), and family social isolation (Fox, Vaughn, Llanes Wyatte, & Dunlap, 2002).

The problem behaviour of children with developmental disabilities contributes to the social isolation of their families by disrupting the daily routines and activities normally experienced by most families (e.g., going to the grocery store, attending church, eating in a
restaurant). These families experience limited participation in activities outside the home, largely due to the fear of how their child will behave in public and the perceptions of others towards their child’s problem behaviour (Fox et al., 2002; Turnbull & Ruef, 1996). For many parents it may be less stressful to stay at home with their child than to risk having to deal with an outburst in a public setting.

The home environment presents different family challenges in terms of daily routines and activities. Basic care-giving tasks become stressful when a child engages in problem behaviour. Plant and Sanders (2007) assessed 105 mothers of children with developmental disabilities and reported that the degree of task difficulty, the presence of child problem behaviour during care-giving, and the level of child disability were the primary contributors to parent stress. Examples of stressful care-giving activities for these mothers included assisting their children during mealtimes, bedtimes, toileting, and cleaning up after their children. The problem behaviour of the children in these and other daily activities calls for constant parent attention and supervision, which creates added stress to parenting (Turnbull & Ruef, 1996).

Establishing and sustaining meaningful family routines is important to parents, especially when faced with challenging behavioural and environmental pressures. Parents establish routines and activities in their daily lives to bring structure, meaning, and predictability to their family environment (Gallimore, Weisner, Kaufman, & Bernheimer, 1989; Weisner, Matheson, Coots, & Bernheimer, 2005). All families attempt to sustain valued routines through accommodations (i.e., functional adaptations to the routine) that are consistent with their children’s characteristics and congruent with their views of family life (Bernheimer & Keogh, 1995; Bernheimer & Weisner, 2007). Families of children with
developmental disabilities often have to make additional accommodations in their daily lives that make their routines less than ideal but “good enough” to sustain (Fox et al., 2002; Woods & Goldstein, 2003). For example, a child might be allowed to “graze” (i.e., stand at the table to eat; leave the table and return when he wants) during dinner in order for him to eat at the same time as the rest of the family. A family faces even more challenges when their child with a developmental disability engages in problem behaviour. Multiple accommodations have to be made that alter daily routines and activities in such ways that make them tolerable but not truly acceptable to the family; some valued routines, within which child problem behaviour is common, might be avoided altogether (Lucyshyn et al., 2004).

**Managing Problem Behaviour: The Need for Survivable Interventions**

Professional attention to the presence of child problem behaviour is typically necessary when problem behaviour becomes established in the functioning of the family. Problem behaviour is unlikely to decrease on its own; families need help in remediating problem behaviour and the negative affect it creates on their lives. Families of children with developmental disabilities often call upon behavioural support services to aid in developing interventions focused on improving child behaviour and family quality of life (Kayser, 2002). Families emphasize the need for comprehensive intervention packages that are individualized to the issues that arise in their day-to-day lives (Turnbull & Ruef, 1996). The challenge for behaviour support providers is to develop interventions that are *survivable* within the context of everyday living. A survivable intervention is one that meets the criteria of being *effective, acceptable, sustainable, and durable* (Lucyshyn et al., 2009, 2011). Each of these criteria is discussed below.
**Effectiveness.** Effectiveness refers to how capable an intervention is at creating positive behaviour change in the functioning of a child with developmental disabilities and problem behaviour. An intervention is deemed effective if it is successful at both reducing the occurrence of problem behaviour and in developing meaningful adaptive skills that contribute to the improvement of the child’s and family’s quality of life (Carr, 2007; Carr et al., 2002; Horner et al., 2002). “It is now expected that effective behavioural intervention will not only reduce the self-injury and tantrums of a young child, but that this reduction will be accompanied by improved social interaction with peers, improved language development at school, and improved opportunities for the family to participate in community and social activities” (Horner et al., 2002, p. 426).

It is important that the development of a survivable intervention involves procedures that are empirically supported by research showing efficacy in positive behaviour change (Horner, Albin, Sprague, & Todd, 2000). However, successful research procedures utilized in laboratory or analog settings do not always ensure similar results when they are applied to real-world situations. The true effectiveness of an intervention relies on its *ecological validity.* Ecological validity refers to how well intervention procedures can be applied in natural contexts to produce significant behaviour change in the daily activities that occur in the home, school, and community settings (Carr, 2007; Carr et al., 2002). The application of the intervention procedures in real-world settings must be practical and their power to affect behaviour must lead to changes significant enough to be deemed socially important (Baer, Wolf, & Risely, 1968).

**Acceptability.** The acceptability of a behaviour support plan is dependent on how socially valid the key stakeholders (e.g., the child, the family, other direct care providers)
consider an intervention. *Social validity* refers to the extent to which consumers agree with and are satisfied with an intervention (Baer, Wolf, & Risely, 1987; Callahan, Henson, & Cowan, 2008). A sophisticated, logical, and empirically effective intervention package may be doomed from its inception if the procedures developed are not acceptable to those responsible for implementing the plan. The intervention is unlikely to be sustained if implementers do not agree with the goals, procedures, and outcomes of an intervention. It is not enough to base an intervention on the power of effective procedures alone; a survivable intervention must also display acceptability to those involved in implementing the plan.

In regard to acceptability, developing a survivable intervention involves individualizing its procedures to “fit” the characteristics of the child and his or her family. What a family believes, how it functions, and how it shapes its daily routines is unique to every family; these variables underlie the social validity of the plan and should be taken into account at every stage of an intervention’s development. A behaviour support plan that displays good *contextual fit* is one whose procedures are congruent with the (a) goals, (b) personal and cultural values, (c) knowledge and skills, (d) available resources (i.e., physical, fiscal, personnel), and (e) environments of the key stakeholders (Albin, Lucyshyn, Horner, & Flannery, 1996; Horner et al., 2000; Lucyshyn, Horner, et al., 2002). Evaluating these factors during the assessment process is more likely to lead to interventions that are more sensitive, thus more acceptable, to a greater diversity of families and family characteristics. “Behaviour supports that have good contextual fit are more likely to be implemented with fidelity in natural environments and are more likely to be maintained by natural change agents” (Buscbacher, Fox, & Clarke, 2004, p. 37).
Sustainability. Treatment fidelity refers to the degree within which those responsible for carrying out the behaviour support plan are accurate and consistent in their execution of the intervention’s procedures (Gresham, 1996). The likelihood of an intervention’s effectiveness is improved when the family follows through with plan strategies as intended. Therefore, it is important to teach family members and other caregivers to implement a behaviour support plan with a high degree of fidelity. It is not enough, however, to only have high levels of fidelity during the time of implementation support by the interventionist. Treatment fidelity by key stakeholders needs to be maintained long after the conclusion of direct support services. Sustainability refers to the ability of implementers to continue to implement the behaviour intervention over time (Carr, 2007). A behaviour intervention in the home is sustainable when the family members are able to maintain a high level of treatment fidelity during and beyond the period of direct support.

A sustainable intervention is a practical intervention. The plan’s procedures need to match the abilities and environments of those responsible for implementation. An intervention is unlikely to be sustained if its strategies are beyond the knowledge and skills of the family. In addition, behaviour support strategies must be incorporated into the existing routines of the family if an intervention is to be implemented over time on an accurate and consistent basis (Albin et al., 1996; Bernheimer & Weisner, 2007; Lucyshyn, Kayser, Irvin, & Blumberg, 2002; Moes & Frea, 2002). An intervention that shows significant positive behaviour change and high levels of acceptability might not be sustained if its procedures require the family to make substantial changes to their ongoing family practices and routines (Bernheimer & Weisner, 2007; Horner et al., 2000).
**Durability.** An intervention’s true measure of success comes from its ability to maintain positive change in child behaviour over time. Durability refers to the long-term effectiveness of a behaviour support plan. An intervention must show that its effects on child behaviour last long after the period of direct support. A survivable intervention’s impact on child behaviour is measured in months or years rather than days or weeks (Carr, 2007; Kern, Gallagher, Starosta, Hickman, & George, 2006). Durability is dependent on the design of sustainable behaviour support procedures; lasting change will only occur if those responsible for implementation are able to carry out a plan’s strategies with fidelity over time (Moes & Frea, 2000).

It is important to recognize that as individuals develop and as families change over time, so too must intervention strategies. “Problem behaviours typically recur as the child encounters new circumstances, new environments, and new developmental challenges, and also as the support systems and personnel (e.g., teachers) change over time” (Dunlap, Newton, Fox, Benito, & Vaughn, 2001, p. 219). Therefore it is necessary to monitor and address any potential barriers to maintenance that may arise over time in an effort to ensure durability (Kazdin, Holland, Crowley, & Breton, 1997; Kazdin & Whitley, 2003).

Assessment must be a dynamic process that can be adjusted to meet the changing circumstances of child and family life across the lifespan (Bernheimer & Keogh, 1995; Dunlap et al., 2001; Lucyshyn et al., 2009).

**Understanding Problem Behaviour: The Need for Assessment Based Upon an Ecological Unit of Analysis**

If we wish to develop interventions that meet the criteria of survivability, we need to gain a deeper understanding of problem behaviour emitted by children with developmental
disabilities. To do so, we need to expand the assessment process from a univariate focus on child problem behaviour to a multivariate focus on identifying the various factors that contribute to the etiology of problem behaviour and how they are maintained in the lives of these children and their families. Lucyshyn and colleagues (Lucyshyn et al., 2004, 2009, 2011) suggest that the assessment and design of survivable interventions be based upon an expanded, ecological unit of analysis—coercive processes in family routines. They propose that this ecological unit of analysis, comprised of principles from behaviour theory (Skinner, 1953), coercion theory (Patterson, 1976), and ecocultural theory (Gallimore et al., 1989), is needed to account for the many sources of variability that play a role in the development and maintenance of problem behaviour. Behaviour theory, coercion theory, ecocultural theory and the constructs these theories contribute to Lucyshyn’s proposed ecological unit of analysis are described below.

**Behaviour theory.** Behaviour theory involves understanding the relationship between behaviour and the environment. Behaviour operates upon the environment to generate consequences. The contingent frequency of these consequences influences the probability with which behaviour will be emitted in similar situations in the future. For example, a child’s tantrum at dinner might result in him or her being able to leave the table. The more frequent the child is allowed to leave the table contingent upon a tantrum, the more likely the child will use tantrums as a means of ending his or her dinner. This operant perspective of behaviour (Skinner, 1953) serves as an empirical basis from which survivable interventions can be developed.

Understanding the relationship between behaviour and the environment involves the following assumptions: behaviour is lawful, functional, and contextual (Dunlap, Harrower, &
First, behaviour adheres to a set of naturally occurring laws; understanding these behavioural laws allows us to reliably predict and manage the occurrence of future behaviour. Examples of behavioural principles that govern behaviour include positive reinforcement, negative reinforcement, punishment, and extinction (Bijou & Baer, 1961; Kazdin, 2001).

Second, individuals engage in certain behaviour for specific communicative functions. Research has demonstrated that the problem behaviour of children with developmental disabilities reliably communicates some form of the following functions: (a) gaining social attention, (b) escaping/avoiding aversive situations (e.g., demands, tasks, people), (c) gaining access to preferred items or activities, and (d) gaining sensory or automatic reinforcement (Carr & Durand, 1985; Derby et al., 1994; O' Neill et al., 1997).

The third characteristic of behaviour, behaviour being contextual, describes how environmental variables affect behaviour. “Context consists of very many events and circumstances, and behaviour is governed by the complex interaction of these events and circumstances” (Dunlap et al., 2005, p. 31). A four-term contingency is often used to describe the proximal environmental conditions that influence behaviour. The contingency is comprised of: (a) establishing operations (i.e., distal environmental events and physiological states that set up or influence the occurrence of target behaviour), (b) antecedent events (i.e., the immediate triggers for target behaviour), (c) target behaviour, and (d) consequence events (i.e., the immediate reactions the target behaviour evokes from others; Repp & Horner, 1999).

Applied behaviour analysis (ABA) is the science of behaviour change based upon the principles of behaviour theory (Baer, Wolf, & Risely, 1968, 1987). “Applied behaviour
analysis seeks to make meaningful improvement in important behaviour and to produce an analysis of the factors responsible for that improvement” (Cooper, Heron, & Heward, 2007, p. 20). Applied behaviour analysts have designed, implemented, and evaluated behavioural technologies that have produced empirically effective, socially valid, and durable behaviour change (Kern et al., 2006; Reeve & Carr, 2000; Vaughn, Wilson, & Dunlap, 2002). Building upon the accomplishments of ABA, positive behaviour support (PBS) integrates the science and technology of behaviour change with the values of normalization, inclusion, and self-determination (Carr et al., 2002; Horner, 2000). PBS: (a) extends analysis to a systems level, (b) is child- and family-centered in its focus on improving quality of life, (c) emphasizes proactive prevention of problem behaviour, and (d) takes into account the perspectives of key stakeholders in developing collaborative interventions that aim to be socially valid and demonstrate contextual fit (Dunlap & Fox, 2007; Marshall & Mirenda, 2002).

*Functional assessment* is the central behaviour change technology used by both ABA and PBS to understand the functions of problem behaviour using the four-term contingency as its base. Interviews with key stakeholders, direct observation in natural conditions, and experimental manipulations, called functional analyses, are three strategies for collecting functional assessment information (Carr, Langdon, & Yarbrough, 1999; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; O'Neill et al., 1997; Repp & Horner, 1999). The purpose of the functional assessment process is to identify the environmental variables that set up, trigger, and maintain problem behaviour and to use this information to develop interventions that promote positive behaviour change through the reengineering of problematic environments (Cooper et al., 2007). Developing an intervention from information gathered from a functional assessment, especially functional analysis manipulations, increases the
likelihood of successful positive behaviour change (Herzinger & Campbell, 2007). Research syntheses have documented the empirical use of functional assessments in successfully identifying the functions of problem behaviour and in guiding the development of effective interventions (Campbell, 2003; Carr, Horner et al., 1999; Horner et al., 2002).

Girolami and Scotti (2001) provide an example of the successful use of functional assessment in identifying the functions of child problem behaviour. They conducted functional analyses of the food-related problem behaviour (e.g., food refusal, negative vocalizations) of three children with developmental disabilities. Analog feeding situations were created within which the functions of the problem behaviour exhibited by the children and their maintaining variables could be experimentally identified. Two of the children exhibited problem behaviour in order to escape mealtime demands and the presentation of food. These children were negatively reinforced by the contingent removal of those mealtime-related demands. The function of the third child’s problem behaviour was to gain access to toys and attention from his caregiver. This child was positively reinforced by the contingent access to preferred toys and attention.

Derby et al. (1997) provide an example of how functional assessment can lead to the development of effective interventions. They utilized descriptive assessment (e.g., parent interviews, ratings of home activities, daily behaviour logs) and experimental analyses (e.g., antecedent and functional analyses) to identify the functions of problem behaviour (e.g., self-injury, destruction, tantrums) displayed by four children with developmental disabilities. Attention and escape were determined as the primary functions of the children’s problem behaviour, dependent on the child and the situations they were in (e.g., reduced levels of parent attention, increased task demands). The study’s goal was for parents to utilize
functional communication training (FCT) to teach their children mands (i.e., verbal or signed requests) that were functionally equivalent to the functions of their problem behaviour. The implementation of FCT by parents resulted in the reduction of child problem behaviour and the emergence of positive social behaviour in all of the cases. Follow-up probes conducted for a period up to 20-months evidenced the long-term maintenance of the effects of FCT.

In summary, behaviour theory’s contributions to Lucyshyn and colleagues’ ecological unit of analysis include: (a) understanding the events in the four-term contingency that set the stage for, occasion, and maintain problem behaviour; and (b) understanding the functions of behaviour, via functional assessment, and designing interventions linked to these functions. These contributions are viewed as the first necessary components to the development of survivable positive behaviour interventions in family contexts (Lucyshyn et al., 2009).

Coercion theory. Patterson and colleagues’ (Patterson, 1982; Patterson, Reid, Jones, & Conger, 1975; Reid, Patterson, & Snyder, 2002) coercion theory proposes that the behavioural, social, and developmental origins of problem behaviour in antisocial children occur within the daily interactions they share with their parents and siblings. These relationships consist of microsocial (i.e., moment-by-moment) exchanges within which the parent and child act and react to one another’s behaviour. A coercive family system is characterized by bidirectional parent-child interaction that involves the use of aversive behaviour in an attempt to control the behaviour of others. Coercion occurs in a dyadic context; coercion from the parent controls the child and coercion from the child controls the parent (Patterson, 2002). This suggests that the antisocial child both lives in, and contributes to, a coercive family system (Patterson, 1976).
Coercion theory applies operant principles to understanding how aversive behaviour contributes to coercive family systems. The actions and reactions of the parent and child are governed by antecedent and consequence stimuli that elicit and maintain child and parent behaviour. A coercive pattern of interaction involves a four-step process in which: (a) parent behaviour is aversive to the child (e.g., a demand; absence of attention), (b) the child responds with problem behaviour, (c) the parent withdraws their aversive behaviour (e.g., withdraws the demand; gives the child attention), and (d) the child terminates or reduces his or her problem behaviour. Problem behaviour becomes functional over time due to its ability to allow the child to either escape/avoid the aversive situation (i.e., negative reinforcement) or to gain attention or preferred materials/activities (i.e., positive reinforcement; Snyder & Stoolmiller, 2002). Child problem behaviour is maintained by the parent’s submission; the child terminating his or her problem behavior negatively reinforces the parent’s “giving in” behaviour. As noted by Lucyshyn et al. (2009), “Both the parent and child are unaware of the consequences of their own behaviour and thus become trapped in a relationship that reciprocally maintains child problem behaviour and ineffective parenting practices” (p. 77).

The following is an example of a four-step escape-driven coercive interaction: (a) the parent presents an aversive demand to the child (e.g., parent picks up a fork with a piece of broccoli on it and says, “Have a bite.”), (b) the child engages in problem behaviour (e.g., child protests by screaming and pushing the fork away), (c) the parent withdraws the demand (e.g., parent puts down the fork and eats her dinner), and (d) the child terminates his problem behaviour (e.g., child calms down and resumes eating his preferred toast with syrup).

The following is an example of a four-step attention-driven coercive interaction: (a) the parent is busy (e.g., parent is doing the dishes in the kitchen), (b) the child engages in
problem behaviour (e.g., child bangs repeatedly on the television), (c) the parent gives attention to the child (e.g., parent walks up to the child, tells him not to bang on the television, turns on a video, and sits with him), and (d) the child terminates his problem behaviour (e.g., child calms down).

Coercion is socially functional for the child in the short term but has a damaging impact on development in the long term (Patterson, 1982). Coercive interaction can establish in the functioning of the family and become automatic or reflexive (Dumas, 2005). Coercive interaction might begin with infrequent, mildly aversive problem behaviour (e.g., noncompliance, whining) but as the frequency and duration of familial conflicts increase, the intensity and scope of the behaviour can escalate to more serious antisocial behaviour (e.g., self-injury, physical aggression; Snyder, 1995). “Extended coercive interchanges during family interaction play a critical role in increasing the variety and severity of children’s antisocial behaviour” (Snyder & Stoolmiller, 2002, p. 73). Coercive family interaction may set the antisocial child on a developmental pathway towards academic failure, affiliation with deviant peer groups, juvenile delinquency, adult arrests, hostility towards women, and an array of mental health problems (Bank, Patterson, & Reid, 1996; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998).

Understanding the etiology of problem behaviour in the coercive family context involves the collection and analysis of observational data (Patterson, 1982; Reid, 1978). Snyder and Stoolmiller (2002) outline the basic observational approach employed by Patterson and colleagues at the Oregon Social Learning Center to assess coercive processes in parent-child interaction. First, the observation of parent-child interaction occurs in real-world settings. Second, a detailed coding system is used to describe the behavioural events
that occur between the parent and child. Third, the behavioural records documented by the coding system describe the microsocial actions and reactions of the family in real time. Fourth, sequential analyses (Bakeman & Gottman, 1997; Bakeman & Quera, 2011) are used to identify and describe patterns of antecedent and consequence events associated with the behaviour of the parent and child. These contingencies aid in generating hypotheses regarding the functions of behaviour involved in parent-child interaction. Finally, the probabilities with which particular responses occur relative to the occurrences of particular antecedents (i.e., conditional probabilities) are calculated and their probabilities are submitted to a statistical test to determine whether the pattern of parent-child interaction observed in the data is statistically significant.

Although the presence of coercive processes in parent-child interaction have been well established in research with antisocial boys and their families, there have been few studies that have examined the presence of coercive processes in families of children with developmental disabilities. Floyd and Phillippe (1993) designed an observational study interested in describing several aspects of parent-child interaction in families of children with and without mental retardation, including the presence of coercion. Interaction between the parent and child participating in typical family tasks (e.g., preparing dinner, eating dinner, baking cookies, family crafts) was captured across two 50 minute videotaped observation sessions. Coercion was documented in these interactions through the presence of two-step exchanges within which the parent presented a demand and the child responded with problem behaviour.

Carr, Taylor, and Robinson (1991) examined the effects of child problem behaviour on the teaching behaviour of adults. Twelve adults were trained to teach pairs of children
(i.e., one child identified as exhibiting problem behaviour and one that typically did not) using discrete trial techniques in a classroom setting. The results demonstrated that the instructional demands of the adults were followed with higher problem behaviours elicited by the problem children than that of the typical children. The behaviour of the children also had an effect on the behaviour of the adults; the adults directed fewer instructional demands towards the problem children than to those without problem behaviour and they restricted the breadth of their teaching (i.e., chose easier activities associated with fewer problem behaviours) when they presented tasks to the difficult children. The adults’ avoidance of problem behaviour associated with teaching difficult children demonstrated the negative reinforcement of adult acquiescence to child behaviour problems that occurs within coercive interaction.

Lucyshyn et al. (2004) conducted a comprehensive examination of coercive parent-child interaction in families of children with developmental disabilities and problem behaviour. The aim of the study was to provide empirical evidence for the existence of coercive processes in typical but problematic home routines. Videotaped observations of 10 families were conducted in valued but unsuccessful daily routines (e.g., eating dinner with the family, reading time with parent). The Parent and Child Coding System (PACCS; Lucyshyn, Laverty, et al., 2007) was used to code the real time, moment-by-moment behaviour of the parents and children participating in the routines. Sequential analyses of the behavioural records were conducted to test hypotheses about the presence of coercion in the parent-child interaction.

Results indicated preliminary, partial empirical support for the existence of coercion in the typical routines of families of children with developmental disabilities. Two coercive
processes, an attention-driven process and a moderated escape-driven process, were identified in the sequential analyses of parent-child interaction. First, the presence of statistically significant, attention-driven coercive processes was confirmed in routines within which parents were occupied with non-child-centered tasks (e.g., preparing dinner, working on the computer). The identified attention-driven coercive processes involved the same four steps as described earlier in this section (i.e., parent busy → child problem behaviour → parent delivers attention → child terminates problem behaviour).

Second, results offered modest support for the presence of stable escape-driven coercive processes in routines within which parent demands were common (e.g., eating dinner, homework time). The four-step escape-driven coercive process described earlier in this section (i.e., parent demand → child problem behaviour → parent withdraws demand → child terminates problem behaviour) was not empirically validated. Instead, a moderated escape-driven coercive process was identified: (a) the parent presents an aversive demand to the child, (b) the child engages in problem behaviour, (c) the parent reduces the demand (i.e., delivers positive or negative attention or provides physical assistance), and (d) the child terminates or reduces his or her problem behaviour (e.g., complies to parent request; complies while engaged in problem behaviour).

In summary, the analysis of coercion in research conducted on children with and without developmental disabilities contributes to an understanding of the behavioural variables that occasion and maintain child problem behaviour and ineffective parenting practices. The second level of Lucyshyn and colleagues’ proposed ecological unit of analysis (Lucyshyn et al., 2009) involves the assessment of coercive processes of parent-child interaction in natural family settings. The development of survivable interventions will be
enhanced by the design of procedures that directly address and ameliorate the coercive processes that contribute to the etiology and maintenance of problem behaviour in the lives of these children and their families.

**Ecocultural theory and the activity setting.** Ecocultural theory (Gallimore et al., 1989) is an empirically grounded theoretical framework for understanding the ecology of child development in the family that is based in research from the fields of cross-cultural anthropology and community psychology. Ecocultural theory supposes that ecological and cultural influences are mediated through the activity settings of daily routines with family members. Natural family environments are comprised of ecological and cultural factors that contribute to how people understand and organize their lives. Ecological factors consist of the objective, physical, material, and social elements that constrain and enable the development of sustainable settings (e.g., income, neighborhood, available resources). Cultural factors involve subjective elements that shape and influence perceptions of what is important within an environment (e.g., beliefs, goals, values). These objective and subjective elements are reflected in how families construct their daily routines and activities.

*Activity settings* are the everyday routines and activities that make up a family’s day (e.g., getting ready for school, eating dinner, going to bed). Activity settings consist of the following elements: (a) the time and place where the activity occurs, (b) the tasks being enacted and their organization, (c) the resources used or available, (d) the personnel present during the activity, (e) the cultural values and beliefs of the personnel, and (f) the goals and purposes of the activity (Lucyshyn, Kayser, et al., 2002). Activity settings integrate subjective experience, behaviour, and objective factors into a common phenomenon (O'Donnell & Tharp, 1990; O'Donnell, Tharp, & Wilson, 1993). Everyday routines represent
a microcosm of family ecology and culture and provide essential contexts for child development and learning (Dunst, Hamby, Trivette, Raab, & Bruder, 2000; Spagnola & Fiese, 2007).

Activity settings have served as a basic unit of analysis in the design and implementation of interventions in varying fields; for example, early intervention (Bernheimer & Keogh, 1995) and community psychology (Gallimore, Goldenberg, & Weisner, 1993). Lucyshyn and colleagues (Binnendyk & Lucyshyn, 2009; Lucyshyn & Albin, 1993; Lucyshyn, Kayser, et al., 2002) have extended this application to the design of survivable behavioural interventions by expanding their assessment process to include an analysis of family activity settings. Utilizing family activity settings as a basic unit of analysis in behavioural assessment allows for the identification of the ecological and cultural factors that contribute to the development and maintenance of problem behaviour (Lucyshyn & Albin, 1993). Understanding these factors facilitates the development of intervention procedures that are congruent with the perspectives and resources of the family. Intervention procedures that are sensitive to the ecocultural characteristics of the family are more likely to fit within the routines and activities of the family. The development of survivable behaviour support is also dependent on how well intervention procedures can be embedded into the activity settings of the family. Recent PBS research has offered evidence of effectiveness, acceptability, sustainability, and/or durability by embedding technically sound and contextually appropriate intervention procedures within the daily routines and activities of families with children with developmental disabilities and problem behaviour (Binnendyk & Lucyshyn, 2009; Buschbacher et al., 2004; Clarke, Dunlap, & Vaughn, 1999; Lucyshyn,
Albin, et al., 2007; Lucyshyn, Albin, & Nixon, 1997; Moes & Frea, 2002; Vaughn, Clarke, & Dunlap, 1997).

Vaughn et al. (1997) assessed and designed a PBS plan focused on child problem behaviour emitted within the family activity settings of going to the bathroom in the home and dining out at a fast-food restaurant. The mother of an 8-year-old boy with severe cognitive disabilities participated in a functional assessment interview with researchers and several observations were conducted of the child's behaviour in the two identified routines. Problem behaviour within the bathroom routine was identified as a function of the child avoiding both the transition to the bathroom and the process of toileting himself, which he found difficult. Disruptions during the restaurant routine were a function of escaping the period in which he had to wait while his mother ordered the family's food. Intervention procedures were developed to address these functions and were implemented in a multiple baseline design across settings by the child's mother. The interventions were effective in producing rapid reductions in problem behaviour and increases in independent engagement in each routine.

Clarke et al. (1999) demonstrated the effectiveness and acceptability of an assessment-based intervention aimed at improving the behaviour of a boy with Asperger syndrome within his daily routine of waking up and getting ready for school. A functional assessment conducted within the child's early morning routine identified the functions maintaining his problem behaviour; the boy engaged in disruptive behaviour (e.g., yelling, repetitive speech, stomping his feet) to escape from his morning dressing routine and to participate in other preferred activities (e.g., playing with his hamster, running around the house, watching television). An intervention package was collaboratively developed by the
child’s parents and their interventionist and implemented by the boy’s mother in the activity setting of the child's early morning routine. A reversal design documented the efficacy of the intervention package in reducing the child's problem behaviour, increasing his levels of on-task responding, and reducing the length of time it took the child to complete his morning routine. Differences in parent ratings between baseline/withdrawal and both intervention phases provided evidence of the social validity of the behaviour support procedures. The child’s mother indicated that the procedures were easy to implement and she believed that they would work well in other problematic routines.

Moes and Frea (2002) utilized the activity settings of daily routines as a context for assessment, family training, and implementation. The study evaluated the effectiveness, acceptability, and durability of contextualized versus prescriptive behaviour support focused on using FCT procedures. Three families raising young children with autism and problem behaviour were recruited to participate in a multiple baseline design across participants. The design involved four phases: (a) baseline, (b) prescriptive FCT, (c) contextualized FCT, and (d) follow-up. The assessment process included an assessment of problematic routines, a functional assessment interview, direct observations, and functional analysis manipulations. An assessment of each family's ecology was conducted before the contextualized FCT phase; this allowed the researchers to customize the FCT interventions to "fit" the characteristics of each family's identified routines. High levels of problem behaviour observed for each child in baseline modestly decreased with the introduction of prescriptive FCT and were eliminated or reached near-zero levels in the contextualized FCT phase. The effectiveness of contextualized FCT was also evidenced by the increased use of functional communication by the children from baseline to contextualized FCT. Durability was evidenced via follow-up
probes indicating that reductions in problem behaviour and increases in functional communication were maintained 3 months after intervention. The acceptability of the interventions was measured using parent reports of how well the procedures “fit” within the family context. These evaluations indicated that the parents were uncertain about the contextual fit of the prescriptive FCT procedures. Only after the implementation of the contextual FCT procedures did the parents report that the interventions fit their resources, constraints, beliefs, values, goals, abilities, and needs.

Buschbacher et al. (2004) evaluated the effectiveness, acceptability, and durability of a collaborative PBS planning approach in addressing the challenging behaviour of a 7-year-old boy with autistic characteristics and Landau Kleffner syndrome. A multicomponent behaviour support plan, based upon information gathered from a person-centered planning meeting with key stakeholders and a functional assessment of problem behaviour, was developed in collaboration with the child’s parents. Intervention procedures were implemented in three valued but problematic family routines (i.e., dinner, family television watching, bedtime). The results of a multiple baseline design across routines indicated reductions in problem behaviour and increases in child engagement in all of the routines. Follow-up data indicated that the results maintained and further improved at 2-, 4-, and 12-months post-intervention. To measure the social validity of the intervention, four parent observers viewed videotaped segments of baseline and intervention and rated the acceptability, success, and practicality of the interventions for the three routines. All four parents agreed that (a) the child’s behaviour was acceptable, (b) the child and parents were comfortable, (c) the child participated, and (d) the strategies were effective and practical during intervention sessions.
Lucyshyn et al. (1997) implemented an ecological, family-centered approach to PBS planning with the family of a 14-year-old girl with multiple disabilities and severe problem behaviour across a 26-month period of assessment, intervention, and follow-up. Their functional assessment process was supplemented with an assessment of family ecology variables and an analysis of the family’s valued but problematic activity settings in the home and community. Together the team designed a comprehensive, contextually appropriate, multicomponent PBS plan that addressed the adolescent's problem behaviour in four target routines. The girl engaged in high rates of problem behaviour (e.g., self-injury, aggression, property destruction) to gain attention, to escape abrupt interruptions, and to escape demands asked of her in the routines of eating dinner with the family at home, dining out at a restaurant, participating in home leisure tasks (e.g., giving father a beverage, independent play), and shopping with one or both parents at the grocery store. Data from a multiple baseline design across settings documented a functional relation between the implementation of the behaviour support procedures and reductions in problem behaviour from baseline to intervention. Across a 10- to 14-month period of maintenance and follow-up measurement, the child and her parents successfully participated in target routines in the home and community; improvements maintained with little or no regression at both 3- and 9-months post-intervention. The parents also reported that the goals, procedures, and outcomes of the intervention were important and acceptable and that the support plan fit well with their family ecology.

In a second study examining Lucyshyn and colleagues’ ecological, family-centered approach to behaviour support, Lucyshyn, Albin, et al. (2007) utilized information gathered from a functional assessment process to develop a PBS plan aimed at the long-term
improvement of the problem behaviour of a girl with autism. The study was conducted across a 10-year period beginning when the child was 5-years-old. Four family routines in the home and community were collaboratively selected with the girl’s parents for analysis and intervention (i.e., dinner, bedtime, dining out, grocery shopping). A multiple baseline across family routines evaluated the functional relation between parent implementation of the ecological PBS plan and longitudinal improvements in child behaviour and successful participation in routines. Results indicated that the girl experienced a 94% reduction in her rate of problem behaviour to zero or near-zero levels from baseline to intervention. Her successful participation in routines increased from zero during baseline to 75% of routines observed during intervention. These effects maintained and showed further improvement across a 6-month to 7-year follow-up period, with successful participation in routines reaching 100% of routines observed. Parental social validity and contextual fit ratings were both high, indicating that the goals, interventions, outcomes, and fit of the PBS plan were acceptable to the family.

Binnendyk and Lucyshyn (2009) evaluated the survivability of an ecological, family-centered PBS intervention aimed at improving the severe food refusal behaviour of a 6-year-old child with autism in the activity setting of a snack routine. A comprehensive assessment process (i.e., functional assessment, ecological assessment, feeding assessment) was conducted to identify variables that contributed to the presence of child problem behaviour and important familial factors needed to design survivable interventions. A multicomponent PBS plan was developed in collaboration with the child's mother. The plan was effective in increasing the child’s food acceptance (from 0% of intervals in baseline to 63% in intervention) and successful participation in the snack routine (from 0% of steps completed
in baseline to 100% in intervention). Sixty percent of the snack routines were completed in the desired timeframe (i.e., within 5 to 20 minutes) identified as acceptable by the child’s mother. The acceptability of the plan was high; the mother consistently agreed with the goals, procedures, and outcomes of the plan and viewed the procedures as fitting well with the family’s ecology. The parent was able to implement the support strategies with an adequate level of fidelity, indicating the sustainability of the intervention procedures. The durability of improvements in child behaviour was reported at 26-months post-intervention.

In summary, research with families of children with developmental disabilities and problem behaviour offers evidence that the family routine as a unit of analysis contributes to the design of technically sound interventions that are contextually appropriate within natural family contexts, acceptable to the family, and durable over time. Given this evidence, Lucyshyn and colleagues argue that the activity setting of daily and weekly family routines is the third necessary component in an ecological unit of analysis that promotes survivable interventions in family contexts.

**Synthesis: Coercive processes in family routines.** The construct of coercive processes in family routines incorporates child behaviour, parent-child interaction, and the activity setting of daily routines into a highly useful ecological unit of analysis (Lucyshyn et al., 2004). The construct of coercive processes in family routines expands behavioural assessment from a univariate focus on the function of child problem behaviour to a multivariate understanding of both the reciprocal patterns of interaction between parent and child and the broader contextual elements of family ecology.

Daily family routines naturally involve child behaviour and parent-child interaction; therefore, the three empirically supported levels of analysis (i.e., functional assessment,
assessment of coercive processes, assessment of activity settings) can easily be integrated when assessment is conducted within family activity settings. First, functional assessment allows us to understand the functions of child problem behaviour. This information is used to design technically sound interventions that are logically linked to the environmental variables that set up, trigger, and maintain problem behaviour (Albin et al., 1996; Horner et al., 2000).

Second, the assessment of coercive patterns of parent-child interaction allows us to understand the “reciprocal effect of the parent on the child and the child on the parent” (Lucyshyn et al., 2009, p. 88). This understanding of the reciprocal behavioural mechanisms that occasion and maintain both child problem behaviour and ineffective parenting practices promotes the design of support procedures aimed at ameliorating these maladaptive patterns of parent-child interaction. Parent implementation fidelity and the long-term use of intervention procedures are more likely to occur if the strategies successfully dismantle and amend the parent’s history of negative reinforcement for submission to the child (Binnendyk, 2009).

Third, the assessment of activity settings allows us to understand the contextual variables surrounding the family that affect child and parent behaviour. Activity settings include both objective (e.g., time and place, tasks, resources, personnel) and subjective (e.g., values, beliefs, goals) elements and therefore provide an appropriate environment for designing contextually appropriate and culturally sensitive interventions in collaboration with families (Chen, Downing, & Peckman-Hardin, 2002; Gallimore et al., 1993; Lynch & Hanson, 2004). The activity settings of daily life also offer the interventionist an opportunity to embed interventions within the core elements of specific family routines (e.g., eating dinner, going to bed, getting ready for school). Doing so with attention to contextual and
cultural fit may improve the effectiveness and efficiency of behavioural parent training, increase the acceptability and feasibility of behavioural interventions to family members, and enhance the ability of family members to implement interventions with fidelity (Lucyshyn et al., 2009). Teaching parents to build successful activity settings may also enhance the long-term maintenance of treatment outcomes (Gallimore, 2005; Lucyshyn et al., 2009). In addition, because family activity settings represent instantiations of the broader ecology that surrounds the child and family, they offer a window into contextual influences that may need to be taken into account when working with families (e.g., sibling relationships, marital strain, extended family relationships).

Our understanding of problem behaviour is enhanced because the ecological unit of analysis expands our view of the sources of variability that affect child and parent behaviour (e.g., functions of child behaviour, coercive patterns of interaction, elements of activity settings). The development of survivable interventions is dependent on understanding and directly addressing these sources of variability that contribute to the etiology and maintenance of problem behavior. Lucyshyn and colleagues (Binnendyk, 2009; Lucyshyn et al., 2009, 2011) have proposed an ecological, family-centered PBS approach to assessment and intervention that guides the design of interventions that meet the criteria of being survivable (i.e., effective, acceptable, sustainable, and durable).

An Ecological, Family-Centered PBS Approach to Assessment and Intervention

The following section describes an ecological, family-centered PBS approach to assessment and intervention for families of children with developmental disabilities and problem behaviour based upon the construct of coercive processes in family routines. The aim of this approach is to generate necessary and sufficient knowledge for the design of
effective and acceptable interventions that parents can sustain across a variety of natural family contexts over a long period of time (Binnendyk, 2009; Lucyshyn et al., 2009). The approach employed in this study is an adaptation of a comprehensive PBS approach developed by Lucyshyn and colleagues (Lucyshyn & Albin, 1993; Lucyshyn, Albin, et al., 2007; Lucyshyn et al., 1997; Lucyshyn, Kayser, et al., 2002). The approach has six steps: (a) build and sustain a collaborative partnership with the family, (b) comprehensive assessment, (c) behaviour support plan design, (d) implementation support, (e) continuous evaluation and plan improvement, and (f) follow-up. A description of these steps is presented below.

**Building and sustaining a collaborative partnership with the family.** Throughout the assessment and intervention process, the interventionist works to build a collaborative partnership with the family (Kanfer & Grimm, 1980; Turnbull, Turnbull, Erwin, & Sodak, 2006). Parents possess expert knowledge about their children and families’ ecologies that is essential to the design and implementation of survivable behaviour support efforts (Dunlap et al., 2001). A collaborative partnership with families is defined as “the establishment of a truly respectful, trusting, caring, and reciprocal relationship in which interventionists and family members believe in each other’s ability to make important contributions to the support process; share their knowledge and expertise; and mutually influence the selection of goals, the design of behaviour support plans, and the quality of family-practitioner interactions” (Lucyshyn, Horner, et al., 2002, p. 12).

**Comprehensive assessment.** Comprehensive assessment consists of three kinds of assessment: (a) a functional assessment, (b) an assessment of coercive processes in parent-child interaction, and (c) a family ecology assessment. First, the functional assessment process consists of a functional assessment interview, functional assessment observations,
and, if necessary, functional analyses (i.e., experimental manipulations) to identify the functions of child problem behaviour (O'Neill et al., 1997).

Second, the assessment of coercive processes in parent-child interaction involves asking one additional question during the functional assessment interview and one additional event is examined during direct observations: What does the child do after the parent withdraws or terminates the request or demand? If the results of the interview and observation indicate that the child reliably terminates or reduces problem behaviour, then it is likely that a coercive process is in effect (Binnendyk, 2009; Lucyshyn et al., 2004, 2009, 2011).

Third, the family ecology interview (Albin et al., 1996; Lucyshyn & Albin, 1993; Lucyshyn, Kayser, et al., 2002) involves semi-structured, open-ended questions about important characteristics of the family (i.e., family strengths and positive contributions of their child; the resources and social supports the family uses; sources of stress; goals for the child and family) and an assessment of family activity settings (i.e., family’s description of valued but problematic daily/weekly routines; prioritization of these routines for intervention; description of envisioned, realistic, successful routines).

**Behaviour support plan design.** The next step in the process is to utilize the information gathered during the assessment process to collaboratively develop a technically sound and contextually appropriate behaviour support plan. The design process involves four steps: (a) build a summary statement/competing pathways diagram, (b) identify strategies logically linked to features of child problem behaviour, (c) finalize strategies that are likely to be effective and contextually appropriate, and (d) develop an implementation plan.
First, a summary statement/competing pathways diagram is built from the functional assessment information that outlines the four-term contingency (i.e., setting events → antecedent triggers → problem behaviours → maintaining consequences) that is operating in the routine, as well as the desired behaviour for the routine and acceptable alternative replacement behaviour (O'Neill et al., 1997).

Second, behaviour support strategies that are logically linked to each feature of the problem in the competing pathways diagram are generated to make problem behaviour irrelevant, ineffective, and inefficient at achieving their purpose, and to make positive behaviour highly functional for the child (Lucyshyn, Kayser, et al., 2002). Behaviour support plans are comprised of setting event strategies (Horner, Vaughn, Day, & Ard, 1996), preventative strategies (Smith & Iwata, 1997), teaching strategies (Mirenda, MacGregor, & Kelly-Keough, 2002; Carr & Durand, 1985), and consequence strategies (Horner et al., 2000) that are selected from a broad class of empirically validated interventions.

Third, the parents and interventionist survey the proposed strategies and review the family ecology information to collaboratively distill the emerging plan into one that is likely to be effective and contextually appropriate (Lucyshyn, Kayser, et al., 2002).

The final step in the design process is to develop an implementation plan in collaboration with the family. An implementation plan typically includes “a description of training and support activities, a summary of roles and responsibilities, and a time line for completing the process of training and support” (Lucyshyn, Horner, et al., 2002, p. 26).

**Implementation support.** Implementation support involves providing training and support to the family in one routine at a time using behavioural training strategies. There are
two sub-phases to implementation support: (a) initial training and support with the parent, and (b) maintenance support.

The first sub-phase of implementation support is initial training and support with the parent. This phase involves: (a) bringing the child’s appropriate behaviour under the stimulus control of the parent and the relevant features of the routine, (b) building the parent’s capacity to use behaviour support strategies effectively, and (c) ensuring that the support plan fits well within the routine. During this sub-phase, parent training with the interventionist occurs 1 to 3 times a week, depending on the family’s schedule and resources. The interventionist trains the family using behavioural parent training support strategies (e.g., written plan, modeling and coaching, behavioural rehearsal, self-monitoring and self-management procedures, home meetings; Briesmeister & Schaefer, 1998).

An important tool that families use during the initial training and support sub-phase is an implementation checklist. Its purpose is to promote the parent’s accurate use of behaviour support strategies. The checklist is comprised of a list of the support plan strategies and a corresponding evaluation scale (e.g., I reminded my child that he could use his “break time” visual if he wanted a break from eating dinner—YES/NO). The checklist is used as a self-monitoring and self-management tool for the parent’s support plan implementation (Bergan & Kratochwill, 1990; Binnendyk, 2009; Sanders & Dadds, 1993).

Implementation support moves into its second sub-phase, maintenance support, as parents become proficient at implementing behavioural supports and improving their child’s behaviour. The goals of maintenance support are to ensure that: (a) parents continue to accurately and consistently use core intervention strategies in target routines, (b) potential barriers to maintenance are identified and prevented from interfering with long-term success,
and (c) coercive patterns of interaction do not reassert themselves in the routines.

Maintenance support occurs less frequently (i.e., every 2 to 4 weeks) and begins with the parent and interventionist reviewing the intervention strategies of the support plan and retaining only the core strategies that are necessary to maintain success.

The interventionist and family also discuss potential obstacles to maintenance that could lead to regression (e.g., child illness, parent fatigue, parent stress). Based on this dialogue, the interventionist develops a relapse prevention plan that is customized to the family and directly addresses these obstacles. For example, in the case of child illness, the plan might involve the parent reducing their task-related demands, providing additional assistance to the child, or stopping the intervention until the child is feeling better.

Maintenance support also involves the collaborative development of a brief self-monitoring tool used to assess the reoccurrence of coercive patterns of interaction in target routines (Lucyshyn et al., 2009). The self-monitoring tool is comprised of 3 questions: Did your child engage in problem behaviour during the routine? If your child engaged in problem behaviour during the routine, did you reduce or withdraw your demand? If you did reduce or withdraw your demand, did your child decrease or stop engaging in problem behaviour? These questions give parents the opportunity for parents to recognize the absence or reoccurrence of coercive patterns of interaction. If the coercive processes have returned, the interventionist works with the parent to reinstate behaviour support plan procedures in order to re-establish a constructive pattern of interaction with their child.

**Continuous evaluation and plan improvement.** The parents and interventionist collaboratively select multiple measures of evaluation (i.e., direct observation, parent self-report measures, interviews with key stakeholders) to assess the short- and long-term
outcomes of the behaviour support plan (Meyer & Evans, 1993). The purpose of any chosen outcome measure is to provide the support team with relevant information for evaluating progress and improving the survivability of behaviour supports and usefulness of implementation support activities (Lucyshyn, Horner, et al., 2002). Information gained from evaluation data guides changes in implementation support activities, as well as revisions in child- and family-centered interventions. The interventionist begins to fade support when evaluation data indicate that the central goals of the behaviour support plan have been achieved. When the data indicate that a regression has occurred in child behaviour, the interventionist encourages the parents to identify the source of the problem and to use the behaviour support plan and/or relapse prevention plan (i.e., implementation checklist, specific strategies to address obstacles, coercive process assessment tool) to solve the issue with minimal assistance from the interventionist (Binnendyk, 2009). If the parents are unable to solve the problem on their own, the interventionist then provides additional maintenance support as may be needed to overcome the problem.

**Follow-up support.** Behaviour support enters the follow-up phase when the parent demonstrates success in improving child problem behaviour and is able to independently utilize relapse prevention techniques to overcome obstacles to maintenance in family activity settings. In this phase, the interventionist fades contact with the family and arranges “checkups” once every 3 to 6 months to monitor progress (Lucyshyn et al., 2009). The family is encouraged to call the interventionist when old problems have returned or if new problems have emerged that the family is not able to solve on their own. The interventionist may then provide the family with reminders about effective intervention, arrange brief “booster sessions” to support families in their use of interventions, or conduct a problem-focused
functional assessment that helps to update the behaviour support plan (Lucyshyn, Horner, et al., 2002).

**Transforming Coercive Parent-Child Interaction in Family Routines**

The goal of the ecological, family-centered PBS approach to assessment and intervention is to promote change that is so complete that valued but problematic family activity settings are transformed into successful and survivable daily family routines. More specifically, the aim is to transform coercive patterns of parent-child interaction in valued but problematic family routines into *constructive patterns of interaction* that contribute to the development of successful family activity settings. A constructive pattern of interaction involves a four-step process in which: (a) parent behaviour is positively presented to the child (e.g., a request, absence of attention), (b) the child responds with positive or neutral behaviour (e.g., compliance, independent play), (c) the parent responds to the child’s behaviour with positive attention, and (d) the child responds to the parent with further positive or neutral behaviour (Lucyshyn et al., 2009, Lucyshyn et al., 2011). To date, only two research studies have empirically evaluated the construct of coercive processes in family routines for designing comprehensive behaviour support plans that aim to transform coercive parent-child interaction into constructive interaction in the context of valued family routines (Binnendyk, 2009; Lucyshyn et al., 2011).

Lucyshyn et al. (2011) conducted a 5-year investigation of the construct of coercive processes in family routines and its contribution to improving the quality of life of 10 families of children with developmental disabilities and severe problem behaviour. Lucyshyn et al. used the ecological, family-centered PBS approach to assessment and intervention to collaboratively design a survivable, multicomponent behaviour support plan for each family.
A multiple baseline design across routines for each family, comprised of 2 to 4 routines, was employed to evaluate the functional relation between the implementation of an ecological, family-centered PBS plan and improvements in child behaviour and successful participation in valued family routines. Results indicated the effectiveness and durability of the interventions in decreasing overall child problem behaviour (from an average of 51.2% of intervals during baseline, to 12.5% during initial training and support, to 5% during maintenance support, and further improvement to 3.1% during follow-up) and in increasing successful participation in the target routines (from an average of 31.4% of steps completed during baseline, to 81.6% during initial training and support, to 91.5% during maintenance support, and further improvement to 92% during follow-up). Social validity and goodness-of-fit data indicated that parents perceived intervention goals, procedures, and outcomes as important, acceptable, and contextually appropriate. Sequential analyses of behavioural data gathered using PACCS (Lucyshyn, Laverty, et al., 2007) were conducted to identify the presence of coercive and constructive patterns of parent-child interaction in both baseline and intervention. Sequential analysis data indicated the presence of statistically significant coercive processes occurring during baseline but not during intervention (i.e., initial training and support, maintenance support). In contrast, constructive processes were not significantly present during baseline but were during intervention. Taken together, these results provide evidence of the transformation of coercive processes into constructive patterns of parent-child interaction in valued family routines.

In a recent replication of these results, Binnendyk (2009) integrated child eating behaviour, parent-child interaction, and the activity setting of meal routines into the ecological unit of analysis of coercive processes in family routines to address the severe food
refusal of children with developmental disabilities. The purpose of the study was to empirically investigate an ecological, family-centered PBS approach to feeding intervention for: (a) improving child eating behaviour, (b) empowering parents to build a valued and successful meal routine, and (c) transforming coercive parent-child interaction into constructive interaction in meal routines. A multiple baseline design across three families demonstrated a functional relation between implementation of ecological behavioural feeding interventions and improvements in child behaviour. Following parent implementation of the behaviour support plan procedures, problem behaviour related to food refusal decreased to low levels (from an average of 74% of intervals during baseline to 9% during maintenance) and consumption of new, non-preferred foods improved (from an average of 0.05 bites per minute to 1.9 during maintenance). The children and their families were able to successfully participate together in valued meal routines following the introduction of the behavioural interventions (from an average of 20% of child routine steps completed during baseline to 95% during maintenance). Improvements in child behaviour and routine participation were maintained at three months post-intervention. In addition, high social validity and goodness-of-fit ratings and high levels of parental treatment integrity ratings were evidenced, indicating that the behaviour support plans were acceptable and sustainable within the ecology of each family. The implementation of ecological behavioural feeding interventions was associated with improvements in parent-child interaction during meal routines. Strong (i.e., high magnitude) and stable (i.e., statistically significant) four-step escape-driven coercive processes were documented during baseline but not during intervention. In contrast, strong and stable four-step constructive processes were not evident during baseline but emerged during intervention. As noted by Binnendyk, “Taken together, child behaviour,
routine participation, and parent-child interaction data offer[ed] preliminary evidence of the transformation of coercive processes into constructive processes in valued meal routines across the three families” (p. 122).

**Research Problem**

The purpose of this study is to replicate the work of Lucyshyn et al. (2011) and Binnendyk (2009) by empirically investigating the survivability (i.e., effectiveness, acceptability, sustainability, durability) of an intervention based upon the ecological, family-centered PBS approach with a family of a child with a developmental disability and problem behaviour. The approach integrates child behaviour, parent-child interaction, and family activity settings into an ecological unit of analysis and intervention that seeks to transform coercive parent-child relationships into constructive relationships in the context of valued family routines and to promote meaningful changes in the functioning of the family. The study addresses the following research questions:

1. Is there a visual association between implementation of the ecological, family-centered PBS intervention in two valued but problematic family routines and: (a) decreases in the percentage of intervals of child problem behaviour, and (b) increases in the percentage of steps successfully completed in the target routines?

2. Is implementation of the ecological, family-centered PBS intervention associated with maintenance of improvements in parent-child interaction, child behaviour, and routine participation in target routines for up to 8 months post-intervention?

3. Across the two target family routines, will the conditional probability of the parent and child engaging in escape-driven coercive processes of interaction, comprised of the following four steps: (a) parent request/demand; (b) child
problem behaviour; (c) parent terminates request/demand; and (d) child terminates problem behaviour, be statistically significant ($p < .05$) during baseline but not during intervention?

4. Across the two target family routines, will the conditional probability of the parent and child engaging in constructive processes of interaction, comprised of the following four steps: (a) parent request/demand; (b) child compliance; (c) parent positive behaviour; and (d) child appropriate behaviour, be statistically significant ($p < .05$) during intervention but not during baseline?

5. From the parent’s point-of-view, is the ecological, family-centered PBS intervention socially valid?

6. From the parent’s point-of-view, is the PBS plan a good contextual fit with the family's ecology?

7. Is implementation of the ecological, family-centered PBS intervention associated with high levels of parent accurate use of behaviour support strategies?

8. Is there an association between implementation of the ecological, family-centered PBS intervention and improvements in family quality of life and parenting stress?
CHAPTER TWO

Research Methodology

Preliminary Screening Process

Participants. One family of a child with a developmental disability and problem behaviour was recruited for participation in the study. Aidan was a happy, healthy, energetic, and affectionate boy diagnosed with autism. Aidan’s age was 4 years and 7 months at the beginning of the study in 2010; he was 6 years and 3 months at the conclusion of the study in 2012. Aidan was an only child living in a single-parent home with his mother in British Columbia. Aidan and his mother were of European decent and a combination of English and German were spoken in the home. Prior to the study, Aidan was able to speak one-word phrases, often consisting of idiosyncratic words that he had developed to ask for or label common items or activities (e.g., “Milshy” = milk, “Caagen” = cuddle). He engaged in a number of problem behaviours throughout his day: physical aggression, destructive behaviour, inappropriate verbal and physical demands, elopement, negative vocalizations, physical resistance, and food refusal. The only foods Aidan consumed prior to the study were toast with a mixture of hazelnut butter and sugarcane syrup, rice chips, water, and a baby-bottle containing a smoothie mixture (i.e., a combination of fruits, vegetables, oils, vitamins).

Aidan and his mother were recruited through contact with advocacy and support groups, non-profit organizations, and professional agencies serving children with developmental disabilities and their families in the lower mainland of British Columbia. These groups were asked to distribute an introductory letter providing an overview of the study (see Appendix A) to potential candidate families. The letter included: (a) a general outline of the study, (b) the candidate criteria needed for participation, (c) a basic description
of the interventions, and (d) the contact information of the student researcher and Principal Investigator.

One family that met the following criteria was invited to participate in the study: (a) the focus child had a formal diagnosis of a developmental disability (e.g., autism, Asperger syndrome) and/or mental retardation, (b) the child was between the ages of 3 to 6 years old, (c) the child engaged in problem behaviour in a minimum of two typical home-based family routines, (d) the parent(s) spoke sufficient English to ensure that the supports were understood and potentially helpful, (e) the parent(s) did not perceive themselves to be in “crisis” due to the focus child’s problem behaviour (e.g., child engaged in severe physically aggressive or self-injurious behaviour that had caused injury to the child or family; family sought or received crisis intervention services) or family issues that were unrelated to the focus of the study (e.g., sibling with a behaviour disorder, marital conflict, parent with a psychological disorder), (f) the parent(s) agreed to allow an observer to videotape parent-child interaction in typical family routines in the home, (g) one parent was willing to serve as the primary interventionist with their child throughout the research and family support process, (h) initial screening observations of at least two family routines in the home provided clinical evidence of the presence of escape-driven coercive patterns of parent-child interaction, and (i) the family was not planning to move away from the lower mainland of British Columbia within the next 12 months.

Aidan’s mother contacted the Principal Investigator, Dr. Joseph Lucyshyn, with interest in participating in the research study. I, Stephen Chinn, confirmed the family’s candidacy through a telephone pre-screening interview. Aidan’s family was then invited to provide informed consent for participation in a preliminary screening process (see Appendix
B). The preliminary screening process included a brief interview about child problem behaviour during typical home-based family routines and pilot observations to verify problem behaviour and escape-driven coercive processes in these routines. The results of the screening process showed Aidan and his mother to be appropriate candidates for participation. Accordingly, the family was invited to participate in the study. Aidan’s mother consented to participate by reading and signing a consent form for study participation (see Appendix C).

**Settings.** The intervention settings for this study were collaboratively selected and defined by Aidan’s mother and me during the preliminary screening process. The specific criteria for the final selection of the two intervention settings included: (a) the routines were typical and valued by the family; (b) the routines were consistently unsuccessful due to child problem behaviour; and (c) during the preliminary screening process, the four-step escape-driven coercive process was observed.

Using the assessment of family activity settings component of the family ecology assessment (Albin et al., 1996; Lucyshyn, Kayser et al., 2002), Aidan’s mother was asked to identify typical and valued routines in the home that were problematic and unsuccessful due to her child’s problem behaviour. She was encouraged to prioritize the identified routines for intervention that were most problematic to the family, that would greatly improve the quality of Aidan’s and her life together, and/or that could be resolved with a minimum of effort and commitment of time. Aidan’s mother and I identified a cup drinking routine and a dinner routine for further evaluation to serve as potential target intervention settings.

After the two potential intervention settings were selected, Aidan’s mother was asked to envision how the target routines would look if they were successful. Aidan’s mother
collaborated with me to define the content and structure of each envisioned routine. Definitions of the envisioned routines were guided by the elements of activity settings as described by Gallimore and colleagues (Gallimore et al., 1993; Gallimore et al., 1989). Specifically, Aidan’s mother was asked to describe: (a) the time and place where the activity would occur, (b) the tasks that would be enacted and their organization, (c) the resources that would be used or available, (d) the family members who would be present during the activity, (e) the cultural values and beliefs of the family, and (f) the goals and purposes of the activity. The envisioned routines that emerged from the preliminary assessment process were summarized into one-page operational definitions (see Table 2.1). Aidan’s mother reviewed each definition, evaluated its accuracy, and suggested adjustments or corrections. The finalized definitions were used to structure her implementation of the routines during baseline, intervention, and follow-up phases. Defining the target routines prior to baseline procedures ensures the comparability of observation sessions across phases (Lucyshyn et al., 1997).
Table 2.1

*Operational Definitions of Aidan’s Envisioned Routines*

<table>
<thead>
<tr>
<th></th>
<th>Cup drinking</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time/length</strong></td>
<td>• 6:00 – 6:15 PM; approximately 10 minutes</td>
<td>• 6:30 – 7:30 PM; 15-30 minutes</td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td>• At the table in the family room of the home</td>
<td>• At the table in the family room of the home</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>• Aidan and his mother</td>
<td>• Aidan and his mother</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>• Cup, Napkin, Chair, Table</td>
<td>• Tableware and utensils (e.g., plate/bowl, spoon/fork)</td>
</tr>
<tr>
<td></td>
<td>• Cup, Napkin, Chair, Table</td>
<td>• Cup, Napkin, Chair, Table</td>
</tr>
<tr>
<td><strong>Target drinks/foods</strong></td>
<td>• Water, herbal tea, and smoothie mixture</td>
<td>• Chicken, sausage, carrot, cucumber, apple, banana, banana chip, cracker, hummus, and potato</td>
</tr>
<tr>
<td><strong>Child tasks</strong></td>
<td>• Come to the table when called, Sit in his chair, Drink all of the liquid from a cup, Use a napkin, Put his cup in the sink when he is finished</td>
<td>• Come to the table when called for dinner, Sit in his chair, Eat at least 1/3 of the presented food, Use utensils to eat his dinner (if applicable), Drink from a cup, Use a napkin, Signal or ask to leave the table when he is finished eating, Take his plate and cup and place them on the kitchen counter</td>
</tr>
<tr>
<td>Parent tasks</td>
<td>Dinner</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>• Pour water or herbal tea in a</td>
<td>• Call Aidan to the table to sit for dinner</td>
<td></td>
</tr>
<tr>
<td>cup</td>
<td>• Serve food on plates or bowls and place these items</td>
<td></td>
</tr>
<tr>
<td>• Call Aidan to come to the table</td>
<td>on the table before or soon after Aidan sits at the table</td>
<td></td>
</tr>
<tr>
<td>• Give the cup to Aidan</td>
<td>• Sit next to Aidan</td>
<td></td>
</tr>
<tr>
<td>• Request that Aidan place his</td>
<td>• Eat and drink her own meal</td>
<td></td>
</tr>
<tr>
<td>cup in the sink when he is</td>
<td>• Support and encourage Aidan to stay at the table,</td>
<td></td>
</tr>
<tr>
<td>finished</td>
<td>eat his food, to use his utensils, to drink from his cup, and to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use his napkin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dismiss Aidan after he signals/asks to leave the table</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Remind Aidan, as needed, to bring his plate and cup to the kitchen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>counter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clear the table</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child and family goals</th>
<th>For Aidan to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Aidan to:</td>
<td>• Learn to drink liquids from a cup</td>
</tr>
<tr>
<td>• Transition away from using a</td>
<td>• Eat a healthier, wider range of foods</td>
</tr>
<tr>
<td>bottle when drinking</td>
<td>• Eat at least 1/3 of the food presented to him</td>
</tr>
<tr>
<td>to promote Aidan’s typical</td>
<td>• Use utensils appropriately during his meal</td>
</tr>
<tr>
<td>development</td>
<td>• Drink liquids from a cup</td>
</tr>
<tr>
<td></td>
<td>• Use a napkin to wipe his hands and mouth</td>
</tr>
<tr>
<td></td>
<td>• To stay seated at the table with mother for the duration of the meal</td>
</tr>
<tr>
<td>For the family to:</td>
<td>For the family to:</td>
</tr>
<tr>
<td>• Increase the amount of liquid</td>
<td>• Become more independent due to successful a</td>
</tr>
<tr>
<td>consumed by Aidan to promote</td>
<td>successful dinner routine (e.g., ability to go to</td>
</tr>
<tr>
<td>health and future toilet</td>
<td>different places to eat in the future)</td>
</tr>
<tr>
<td>training efforts</td>
<td>• Reduce mother’s anxiety/stress regarding food</td>
</tr>
<tr>
<td></td>
<td>related problem behaviors (e.g., mother not having to worry about</td>
</tr>
<tr>
<td></td>
<td>meals during travels, not worrying about limited quantities of</td>
</tr>
<tr>
<td></td>
<td>preferred foods)</td>
</tr>
</tbody>
</table>
After selecting and defining the two potential intervention settings (i.e., the cup drinking and dinner routines), the next step in the preliminary screening process was to determine if Aidan and his mother engaged in a four-step escape-driven coercive interaction (i.e., parent demand → child problem behaviour → parent withdraws demand → child terminates problem behaviour) within each target routine. I conducted a brief functional assessment of Aidan’s problem behaviour in each potential intervention setting by asking Aidan’s mother specific questions pertaining to Aidan’s behaviour within each routine. Questions regarding the dinner routine included: “How does Aidan react when you tell him it is time to go to the table to eat dinner?” “What do you do in response to him crying and running away from you?” These questions helped to identify the environmental variables that set up, trigger, and maintain Aidan’s problem behaviour. In addition, Aidan’s mother was asked about how Aidan responds after she has engaged in a parental action that served to maintain her child’s problem behaviour. For example, “After you stop asking Aidan to go to the table for dinner and let him continue to watch television, what does he do? Does he continue to engage in problem behaviour or does he calm down?” This information allowed for an initial assessment of a four-step escape-driven coercive process. Following the interviews, I conducted two pilot observations in the target routines to confirm the presence of a four-step escape-driven coercive interaction. The information gathered from the preliminary screening process was later incorporated into the comprehensive assessment.

Measurement

The study employed multiple measurement procedures to monitor the dependent variables and to document implementation of the independent variable (i.e., the ecological, family-centered PBS intervention). These measurement procedures are described below.
Clinical confirmation of the coercive process and design of a break procedure. In Lucyshyn et al.’s (2004) initial investigation of coercive parent-child interaction in families of children with developmental disabilities, the researchers observed parent reactivity to being videotaped while attempting to carry out routines in which parent demands were common (i.e., routines in which the presence of escape-driven coercive processes were hypothesized to exist). The parents tended to persist with routine-related demands while being videotaped and to terminate their demands only after the observer ended the observation. Partly due to this reactivity, the presence of the classic four-step escape-driven coercive process (i.e., parent demand → child problem behaviour → parent withdraws demand → child terminates problem behaviour) was not fully validated. In Lucyshyn et al.’s (2011) subsequent study of coercive processes in family routines, the researchers developed a break procedure that involved a series of steps designed to ensure that naturally occurring escape-driven coercive processes were observed in family routines in which parent demands were common.

Consistent with the procedure developed by Lucyshyn and colleagues, Aidan’s mother and I collaboratively developed a break procedure to reduce parent reactivity to the observation protocol. Prior to conducting experimental baseline, the following set of steps to define a break procedure was implemented. First, I asked Aidan’s mother to describe what she would normally do during the target routines after she presented a routine-related demand to Aidan and he engaged in problem behaviour. Aidan’s mother responded by describing the action of withdrawing her demand from Aidan. Aidan’s mother used phrases like, “I just give up” or “I let him eat what he wants to eat.” Second, Aidan’s mother was asked to describe what she does in these situations in specific behavioural terms. She
with statements like, “I sit at the table and eat my dinner while he walks around watching his videos” or “I give him his bottle and hold him.” These parental responses, which were consistent with parental behavior observed during screening observations, became the definition of a break. Table 2.2 presents the operational definition of the break procedure utilized in this study.

Table 2.2

Operational Definition of the Break Procedure

<table>
<thead>
<tr>
<th>Routine situation</th>
<th>Parent procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent feels she needs a break due to high levels of child problem behaviour</td>
<td>Mother will:</td>
</tr>
<tr>
<td></td>
<td>• Naturally take a break from implementing the routine</td>
</tr>
<tr>
<td>Taking a break from the routine</td>
<td>Mother will:</td>
</tr>
<tr>
<td></td>
<td>• Allow Aidan to move away from the spot of the demand and sit next to him in order to comfort him (e.g., hugging, massaging, providing deep pressure) until he stops crying/calms down</td>
</tr>
<tr>
<td></td>
<td>If Aidan resists attempts at comfort, mother will:</td>
</tr>
<tr>
<td></td>
<td>• Allow Aidan to move away from the spot of the demand and mother will move away from Aidan, but remain in the room to ensure safety, until he stops crying/calms down</td>
</tr>
<tr>
<td>Once Aidan is calm</td>
<td>Mother will:</td>
</tr>
<tr>
<td></td>
<td>• Attempt to re-implement the routine</td>
</tr>
<tr>
<td></td>
<td>• Continue to do so for 5 to 15 minutes, or for 8 to 10 attempts, or until a criterion level of problem behavior has been reached</td>
</tr>
</tbody>
</table>

**Direct videotaped observation sessions and procedures.** I served as the observer for the duration of the study. I used a digital video camera to observe and record parent and child behaviour and interaction in the cup drinking and dinner routines. I implemented
guidelines for home-based observations as described by Patterson (e.g., no visitors, refrain from using the phone, no talking to the observer during videotaping; 1982). Observation probes were conducted during baseline, intervention (i.e., initial training and support, maintenance support), and follow-up phases. Observations were conducted at regular intervals (i.e., every second or third day during baseline, every third or fourth training session during intervention) until stable behavioural patterns were evidenced (e.g., stable high percentage of problem behaviours during baseline, stable low percentage of problem behaviours during intervention).

Aidan and his mother participated in 64 observations across baseline, intervention, and follow-up phases over a period of 22 months. Each observation lasted approximately 2 minutes to 1 hour. Observation sessions took place at the naturally occurring time of the routine and were scheduled on days that were convenient for the family. To ensure Aidan’s and his mother’s safety during the observations, a criterion level of problem behaviour was established with the family that would require the immediate termination of the observation session (i.e., Aidan becomes inconsolable and does not calm down after 10 minutes of continued problem behavior).

During an observation session, I reviewed the operational definition of the envisioned routine with Aidan’s mother and ensured that material resources and the general structure of the routine were present. I asked Aidan’s mother to try and do the target routine at least 8 to 10 times, or alternatively, for 10 to 15 minutes. Aidan’s mother was reminded that she could take a break during the observation session whenever she would naturally do so (i.e., if I was not present). The observation session continued until: (a) the parent attempted to do the
routine 8 to 10 times or after 10 to 15 minutes, (b) the termination criterion occurred, or (c) after the routine was successfully completed.

**Coding videotaped observation sessions.** Six baseline, 25 intervention (i.e., seven initial training and support sub-phase, 18 maintenance sub-phase), and three follow-up observations were collected in the cup routine. Eight baseline, 19 intervention (i.e., 10 initial training and support sub-phase, nine maintenance sub-phase), and three follow-up observations were collected in the dinner routine. In all of the observations across phases (i.e., baseline, intervention, follow-up), child behaviour (i.e., percentage of intervals of problem behaviour, routine steps successfully completed) was coded for each routine; in regard to these two dependent measures, each observation session was coded in its entirety.

In regard to the coding of parent-child interaction in the two target routines, analyses conducted by Lucyshyn et al. (2004) indicated that 10 to 12 observation sessions per phase (i.e., baseline and intervention) of at least 10 minutes in length (i.e., approximately 100 minutes of video for each phase) were sufficient to meet the parametric assumptions of a normal distribution upon which sequential analysis is based (Bakeman & Gottman, 1997). A random sample of 10 baseline and 15 intervention observation sessions across the two target routines were selected for coding parent and child interaction. Ten minutes of each observation were coded for parent and child behaviours. For sessions that lasted more than 15 minutes, the final 10 minutes of the observation were coded. For sessions that were 10 minutes or shorter, the entire observation was coded. Five additional intervention phase observation sessions were randomly sampled for analysis because some of the sessions were shorter than 10 minutes in length. Adding these additional observation sessions was
conducted to ensure that at least 100 minutes of video were coded for parent-child interaction in the intervention phase.

**Computer-based data coding equipment and software.** A desktop computer was used to collect and code data from each videotaped session. Video data were directly downloaded from digital videotape onto the hard drive of the computer and a DVD of the file was created. The password-protected desktop computer was located in the principal investigator’s laboratory in the Faculty of Education at the University of British Columbia; the digital videotapes and DVDs were stored in a locked cabinet also located in the laboratory.

A computer software media player program was used to code child behaviour (i.e., percentage of intervals of problem behaviour, routine steps successfully completed) and parent implementation fidelity (i.e., percentage of intervals of parent accurate use of support plan procedures). When coding an observation session, a trained coder entered the media player software program, selected a file for coding, and coded child behaviour and parent implementation fidelity directly from the computer screen. Data sheets and pencil were used to record the occurrence and/or non-occurrence of child behaviour and parent accurate use of strategies.

A computer software observation program, Observer 5.0 (Noldus, Trienes, Hendriksen, Jansen, & Jansen, 2000), was used to code parent-child interaction. The software provides a system for observing and coding parent and child behaviour in real time. When coding an observation session, a trained coder entered the Observer 5.0 software program, selected a file for coding, and coded parent and child behaviour directly from a viewing box.
on the computer screen. In addition to the viewing box, the customized screen included an event log, a video control panel, and a coding category panel.

**Parent and Child Coding System (PACCS).** Trained coders used PACCS (Lucyshyn, Laverty, et al., 2007) to code parent and child interaction during the target home-based routines. PACCS was developed using guidelines described by Bakeman and Gottman (1997) for designing observational methods for the sequential analyses of dyadic interaction. PACCS consists of 20 parent and child coding categories and their constituent defining codes. There are 10 parent codes and 10 child codes. Codes are organized in a hierarchy for both members of the dyad. The hierarchy allows a coder to select the most salient code when a parent or child is simultaneously engaged in two behaviour categories (e.g., parent delivering praise while doing the dishes). PACCS is based on a turn-taking scheme. It is designed to be sensitive to changes in behaviour categories within one person’s turn and across turns between parent and child.

The hierarchy of parent categories, with agent-action codes in parentheses, is as follows: (a) Negative Attention (PNA), (b) Request/Demand (PRD), (c) Positive Contingency (PPC), (d) Reduced Request/Demand (PRR), (e) Positive Attention (PPA), (f) Physical Assistance (PAS), (g) Non-Compliance (PNC), (h) Compliance (PCO), (i) Other Behaviour (POT), and (j) Occupied (POC).

The hierarchy of child code categories, with agent-action codes in parentheses, is as follows: (a) Problem Behaviour (CPB), (b) Problem Behaviour with Non-Compliance (CPN), (c) Problem Behaviour with Compliance (CPC), (d) Non-Compliance (CNC), (e) Compliance (CCO), (f) Out of Assigned Area (COA), (g) Appropriate Request/Demand (CRD), (h) Positive Attention (CPA), (i) Other Behaviour (COT), and (j) Occupied (COC).
Prior to coding, PACCS coding categories were entered into an Observer 5.0 configuration file for the study and appeared as three-letter agent-action codes (e.g., Parent Request/Demand = PRD) in the coding category panel on the computer screen. The coder watched the observation session in the viewing box and used a computer keyboard and a jog/shuttle to click on codes that represented the onset of specific parent and child behaviour categories. The computer keyboard and jog/shuttle allowed the coder to pause, rewind, or fast-forward the observation session in synchronization with the ongoing coding process. After an observation was coded, it was saved as an observation data file (i.e., an .odf file) in a folder on the computer’s hard drive.

**Sequential analysis coding and data procedures.** Sequential analyses of coercive and constructive processes in family routines occurred across the cup drinking and dinner routines within research phases (i.e., baseline and intervention). The following procedures were used to generate aggregate sequential analysis data. First, observation sessions were coded using PACCS (Lucyshyn, Laverty, et al., 2007) and Observer 5.0 (Noldus et al., 2000). Observer data files (i.e., .odf files) were saved after data for observation sessions were coded.

Second, the OdfSds software program (Bakeman & Quera, 2008) was used to convert .odf data files into a format compatible with the GSEQ for Windows software program (i.e., .sds files; Quera & Bakeman, 2000). The observation sessions that shared the same research phase (i.e., baseline or intervention) were aggregated into one .sds data file after all the observation sessions for a particular phase were coded and saved. GSEQ for Windows was used to compile observation sessions across the cup drinking and dinner routines by research phase. One aggregate data file for the baseline phase across the two target routines was created; it was composed of 10 observation sessions (i.e., approximately 100 minutes of
video). This process occurred for a second aggregate data file, comprised of 15 observation sessions (i.e., approximately 100 minutes of video), in the intervention phase across the two target routines.

Third, the .sds files were then converted into “cycles” using the Cycles software program (Bakeman, 2001). The Cycles software program controls for irrelevant or trivial codes that are interspersed within patterns of coercive interaction (e.g., after a parent demand, the parent engages in one or two other behaviours before the child complies). The Cycles program converted each file of parent and child interaction data into a series of parent-child behaviour “cycles.” A cycle was comprised of one or more parent codes followed by one or more child codes. Thus, each cycle was represented by one line, or cycle, of parent-child interaction.

Lastly, GSEQ for Windows was used to conduct sequential analyses of hypotheses about coercive and constructive processes across routines within a particular research phase. Specifically, questions were posed that statistically tested for the presence of the first two, the first three, and the full four steps in the sequential pattern for: (a) an escape-driven coercive process within routines which parental demands were common, and (b) a constructive process within routines in which parental demands were common (see dependent variables).

**Dependent Variables**

Seven dependent variables were measured to assess the survivability of the ecological, family-centered PBS intervention and its ability to transform coercive patterns of parent-child interaction into constructive patterns of interaction in target routines: (a) percentage of intervals of problem behaviour, (b) percentage of routine steps successfully completed, (c) conditional probability of coercive processes and constructive processes, (d)
average rating of the social validity of the support effort, (e) average index of the support plan’s “goodness-of-fit” with the family’s ecology, (f) percentage of intervals of parent’s accurate use of behaviour support plan strategies, and (g) family functioning scores from the Family Quality of Life Survey (FQOL; Park et al., 2003) and Parenting Stress Index (PSI; Abidin, 1995).

**Percentage of intervals of problem behaviour.** Problem behaviour data were collected during videotaped observations of the cup drinking and dinner routines. Child problem behaviours were defined in collaboration with Aidan’s mother and included behaviours of concern whose intensity levels ranged from low to high. Aidan’s problem behaviours were categorized into the following categories: (a) physical aggression; (b) disruptive, destructive, or dangerous behaviour; (c) inappropriate verbal requests/demands; (d) inappropriate physical assistance; (e) leaving assigned area/running away; (f) non-verbal food refusal; (g) negative vocalizations; (h) physical resistance; and (i) inappropriate eating. Table 2.3 provides the operational definitions of Aidan’s problem behaviours.
Table 2.3

Operational Definitions of Aidan’s Problem Behaviours

<table>
<thead>
<tr>
<th>Problem behaviour category</th>
<th>Definition</th>
<th>Child-specific examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical aggression</td>
<td>Negative physical contact toward another person that causes distress, pain, or injury</td>
<td>Hitting/slapping, kicking, head butting, scratching, biting, pushing/shoving, hair pulling, or throwing object at another person</td>
</tr>
<tr>
<td>Disruptive/Destructive/Dangerous</td>
<td>A very wide class of behaviors that include behaviors that are disruptive to family members and routine success, that are destructive to objects, or that are dangerous to the target child’s physical health</td>
<td>Knocking objects over, slamming shut drawers/cupboards, grabbing items away from others, banging/pounding on surfaces, throwing objects, spilling a beverage, or dumping/pushing items off of surfaces</td>
</tr>
<tr>
<td>Inappropriate verbal requests/demands</td>
<td>A verbal request or demand that is clearly inappropriate to the circumstances</td>
<td>Demanding that his mother give him his bottle, demanding that a video be turned on, demanding that his mother come to an area that is “out of area”, or demanding that his mother move away from him or a certain area</td>
</tr>
<tr>
<td>Inappropriate physical assistance</td>
<td>A physical behavior aimed at prompting or helping the parent engage in a task or activity step that clearly is not part of the expectations of the routine, or is clearly not what the parent wants to do</td>
<td>Physically pulling on mother to leave the assigned area, or physically pulling mother towards an activity that is clearly not part of the routine (e.g., pulling mother towards the television when child should be moving towards the table)</td>
</tr>
<tr>
<td>Leaving assigned area/Running away</td>
<td>During a family routine, the child physically leaves the area that a parent designates as acceptable for the child, or runs away from a parent during a task or activity</td>
<td>Leaving his chair after it has become the assigned area, or moving away from mother when she approaches</td>
</tr>
<tr>
<td>Problem behaviour category</td>
<td>Definition</td>
<td>Child-specific examples</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Non-verbal food refusal</td>
<td>Physical actions that function to keep child from eating food or drinking a beverage</td>
<td>Pushing a utensil, plate, cup, or food away/off of the table; turning head away from food or beverage presented; throwing food off of plate/table; spitting food out of mouth; using hand to take food out of mouth; pushing mother’s hand away when she presents food near the child’s mouth; or turning away from the table while remaining in chair</td>
</tr>
<tr>
<td>Negative vocalizations</td>
<td>Non-verbal vocalizations that are agitated, distressed, or negative in tone; vocalizations can range from low to high intensity</td>
<td>Whimpering, whining, screeching, crying, shrieking, screaming, and nonsensical shouting or yelling</td>
</tr>
<tr>
<td>Physical resistance</td>
<td>Physical resistance to parent physical assistance or restraint</td>
<td>Pushing or pulling away from parent, arching back, sliding down and out of mother’s grasp, pushing parent away, falling limp, or physically evading mother’s attempt to provide physical assistance</td>
</tr>
<tr>
<td>Inappropriate eating</td>
<td>Any eating behaviors that are inappropriate during meal times</td>
<td>Placing too much food in his mouth (i.e., eating becomes inappropriate when Aidan, before swallowing, puts four consecutive bites of food in his mouth)</td>
</tr>
</tbody>
</table>
Problem behaviour was measured as the percentage of intervals of occurrence during a target routine. A partial interval recording system was used with an observation interval of 10 seconds (Richards, Taylor, Ramasamy, & Richards, 1999). An occurrence was scored if problem behaviour occurred at any point during the interval. The percentage of intervals of problem behaviour ($P_{PB}$) was calculated using the following formula: $P_{PB} = \frac{N_{PB}}{\text{Total Intervals}} \times 100$. $N_{PB}$ refers to the number of problem behaviours.

**Percentage of steps successfully completed in routine.** The definitions for routine steps successfully completed were developed in collaboration with Aidan’s mother. First, Aidan’s mother and I identified and defined the steps in each of the target routines. Second, for steps that had a criterion level of performance (e.g., eating food at dinner), the criterion (e.g., eat at least 1/3 of the food presented) was defined. Third, for steps that could occur one or more times during the routine (e.g., use a napkin at least once), the step was defined and successful completion was defined as one or more occurrences of the step. Fourth, the level of problem behaviour that must occur during a step to render it unsuccessful was determined. Criterion levels of problem behaviour ranged from minor (e.g., ignoring demands, protesting) to major (e.g., physical aggression, head-banging). If minor problem behaviour occurred three times or more during a step, the step was scored as unsuccessful. If major problem behaviour occurred one time or more during a step, the step was scored as unsuccessful. Finally, the level of independence required by the child before a step was scored as successfully completed was determined. If Aidan completed the step with verbal, gestural, or physical help, as long as he did not engage in a criterion level of problem behaviour, the step was scored as successful. Table 2.4 provides the target steps to be completed for both the cup drinking and dinner routines.
Table 2.4

**Target Steps to Be Completed for the Cup Drinking and Dinner Routines**

<table>
<thead>
<tr>
<th>Routine steps</th>
<th>Cup drinking</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Come to the table when called.</td>
<td>1. Bring one dinner-related item to the table.</td>
</tr>
<tr>
<td>2.</td>
<td>Sit and remain seated in chair for whole routine.</td>
<td>2. Come to the table when called.</td>
</tr>
<tr>
<td>3.</td>
<td>Drink all of the liquid presented to him in the cup.</td>
<td>3. Sit and remain seated in chair for whole routine.</td>
</tr>
<tr>
<td>4.</td>
<td>Wipe hands and/or face with napkin/towel (1x).</td>
<td>4. Use utensils to eat food (if needed).</td>
</tr>
<tr>
<td>5.</td>
<td>Take his cup to the kitchen and place on counter/in sink.</td>
<td>5. Eat at least 1/3 of the food presented.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Drink liquid from a regular cup (at least 1 sip).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Wipe hands and/or face with napkin/towel (1x).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Signal or ask to leave the table when he is finished eating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Take his plate and cup to the kitchen and place them on the counter/in sink.</td>
</tr>
</tbody>
</table>

Using a checklist of the steps and a definition of the criterion level of problem behaviour and independence, the coders recorded whether a step was successfully completed, not completed, or an opportunity to engage in the step was not provided (e.g., the parent did not place a napkin on the table for the child to use during the routine). Steps completed were measured as the percentage of steps completed during the routine. The percentage of steps
completed \( (P_{SC}) \) was calculated using the following formula: \( P_{SC} = \frac{N_{SC}}{\text{Total Steps}} \times 100 \).

\( N_{SC} \) refers to the number of steps successfully completed.

**Conditional probability of coercive and constructive processes.** Coercive and constructive processes of parent-child interaction were defined for the cup drinking and dinner routines in which Aidan sought negative reinforcement (i.e., escape/avoidance) from parental requests and demands. An escape-driven coercive process was defined as consisting of the following four steps: (a) parent request/demand, (b) child problem behaviour, (c) parent terminates or reduces request/demand, and (d) child terminates or reduces problem behaviour. A constructive pattern of parent-child interaction was defined as consisting of the following four steps: (a) parent request/demand, (b) child compliance, (c) parent positive attention, and (d) child appropriate behaviour.

Conditional probability is defined as the probability that one event (e.g., child problem behaviour) will occur given that some other event (e.g., parent request/demand) has occurred (Howell, 2002). Conditional probabilities were generated by posing questions about sequential relationships between parent and child behaviour that represented the presence of two, three, and four step coercive and constructive processes during escape-driven family routines. Three generic questions were posed to test for the presence of escape-driven coercive processes:

a. Given a parent demand, what was the conditional probability that a child engaged in problem behaviour (i.e., a two-step coercive process)?

b. Given a parent demand followed by child problem behaviour, what was the conditional probability that the parent withdrew their demand (i.e., a three-step coercive process)?
c. Given a parent demand followed by child problem behaviour, what was the conditional probability that the parent withdrew their demand and the child terminated problem behaviour (i.e., a four-step coercive process)?

Three generic questions were posed to test for the presence of constructive processes:

a. Given a parent request/demand, what was the conditional probability that the child complied with the request/demand (i.e., a two-step constructive process)?

b. Given a parent demand followed by child compliance, what was the conditional probability that the parent provided positive attention (i.e., a three-step constructive process)?

c. Given a parent demand followed by child compliance, what was the conditional probability that the parent provided positive attention and the child responded with appropriate behaviour (i.e., a four-step constructive process)?

Questions about sequential relationships between parent and child behaviour were answered by using the General Sequential Querier (GSEQ) for Windows sequential analysis program (Quera & Bakeman, 2000). For each question about coercive and constructive patterns of interaction, GSEQ for Windows generated conditional probabilities within a 2x2 contingency table for aggregated baseline phase data and for aggregated intervention phase data. The cells of the 2x2 contingency table represented target and criterion behaviours (i.e., parent behaviours followed by child behaviours, or child behaviours followed by parent behaviours), as well as the residuals (i.e., all other codes). Always, one behaviour (or behaviour pattern) served as antecedent (i.e., criterion behaviour) to the other behaviour or sequential pattern (i.e., target behaviour). For example, for the first two steps in a coercive escape-driven process, Parent Request/Demand was cross-tabulated with Child Problem
Behaviour. Analyzing the behaviour sequences in a contingency table structure empirically determined, (a) the joint frequency of target and criterion codes, and residuals; (b) the conditional probability of the target behaviour given the criterion behaviour; (c) the adjusted residuals, which approximated a normal distribution and thus were equivalent to binomial z-scores; and (d) the probability value ($p$) that allowed for the interpretation of the adjusted residual in terms of statistical significance based on the obtained data for the family. These dependent variables and measures are outlined in Table 2.5. Conditional probabilities of hypothesized two-, three-, and four-step patterns of parent-child interaction that are statistically significant (i.e., adjusted residual above $1.96, p \leq .05$) are viewed as step-wise confirmation of the hypotheses about coercive processes or constructive processes operating in the family’s routines (Lucyshyn et al., 2011).
Table 2.5

**Dependent Variables and Dependent Measures**

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Dependent measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactional process/Type of routine/Steps</td>
<td>Joint frequency/Conditional probability/Adjusted residuals/Probability values</td>
</tr>
<tr>
<td>1. Coercive/Escape-Driven/2-Step</td>
<td>Child problem response</td>
</tr>
<tr>
<td>2. Coercive/Escape-Driven/3-Step</td>
<td>Parent withdraw/reduce</td>
</tr>
<tr>
<td>4. Constructive/2-Step</td>
<td>Child appropriate behaviour</td>
</tr>
<tr>
<td>5. Constructive/3-Step</td>
<td>Parent positive strategy</td>
</tr>
<tr>
<td>6. Constructive/4-Step</td>
<td>Parent positive strategy &amp; Child positive behaviour</td>
</tr>
</tbody>
</table>

**Average rating of social validity of the support effort.** The social validity of the ecological, family-centered PBS intervention was measured by administering a questionnaire (see Appendix D) to Aidan’s mother. These questionnaires were delivered once at the end of the maintenance sub-phase of intervention and once during the follow-up phase. Aidan’s mother was asked to answer a series of questions that were rated on a Likert-type scale from 1 to 5 (1 = disagree, 5 = agree). The questionnaire assessed her evaluation of the acceptability and importance of the intervention goals, procedures, and outcomes. For each of her evaluations, an average social validity rating across 10 items was calculated and this average was used as a formative rating of social validity.
Average index of the support plan’s “goodness-of-fit” with the family’s ecology.

The “goodness-of-fit” assessment questionnaire (see Appendix E) is designed to evaluate how well the behaviour support plan fits with the ecology of the family (Albin et al., 1996). The items sample five parameters relevant to goodness-of-fit: (a) goals and expectations (e.g., “Does the plan address your highest priority goals?”), (b) congruence to lifestyle (e.g., “Does the plan disrupt the time of day to the point that stress and hardship will be created?”), (c) implementation effort (e.g., “All things considered, how difficult will it be for you to implement the plan?”), and (d) sustainability (e.g., “If the plan is effective, do you believe you can continue to use the strategies for a long time?”). Aidan’s mother rated each item using a 5-point Likert scale (1 = not at all, 5 = very well). The questionnaire was administered once at the end of the maintenance sub-phase of intervention and once during the follow-up phase for each target routine. For each of Aidan’s mother’s evaluations, combined across the two target routines, an average rating across 20 items was calculated and this average was used as a formative index of goodness-of-fit.

Percentage of intervals of parent’s accurate use of behaviour support plan strategies. Parent implementation fidelity was defined as the accurate implementation of a core set of intervention strategies for each target routine that were listed and described in Aidan’s behaviour support plan (see Table 2.6). Approximately 22% of the observation sessions, balanced across intervention and follow-up phases, were scored for Aidan’s mother’s accurate use of the proposed support strategies. Definitions of accurate and inaccurate use were generated after the behaviour support plan was developed. Similar to child problem behaviour, parent behaviour was scored as the percentage of intervals of accurate implementation using a partial interval recording system. The length of the interval
was 30 seconds. An occurrence was scored if accurate use of a support strategy occurred at any point during the interval. The percentage of intervals of parent accurate implementation ($P_{PI}$) was calculated using the following formula: $P_{PI} = N_{PI} / \text{Total Intervals} \times 100$. $N_{PI}$ refers to the number of intervals of parent accurate implementation.
Table 2.6

**Core Behaviour Support Plan Strategies**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Distraction-free environment</td>
<td>The routine is implemented in a distraction-free environment (e.g., television off, no toys).</td>
</tr>
<tr>
<td>2. Offer choice</td>
<td>Aidan is offered the choice of the materials that would be used in the routine (e.g., type of cup/utensil, order of food, type of reward).</td>
</tr>
<tr>
<td>3. Visual schedule</td>
<td>A visual schedule is utilized to provide Aidan with a visual representation of each step that he is required to complete in the routine.</td>
</tr>
<tr>
<td>4. Visual contingency map</td>
<td>A visual contingency map is utilized to provide Aidan with a visual representation of the positive and negative expectations within the routine and the consequences of each contingency.</td>
</tr>
<tr>
<td>5. “Wait” procedure</td>
<td>Aidan should not have more than three bites of food in his mouth at one time. After his third bite, he is told to, “wait”. If needed, he is physically blocked from accessing the food (e.g., mother can place her hand over his plate). Aidan is prompted to place his utensil on the table. This “wait” procedure is continued until Aidan swallows all of the food in his mouth.</td>
</tr>
<tr>
<td>6. Contingent reinforcement</td>
<td>Aidan is reinforced with verbal praise for successful compliant behavior and/or step successfully completed. The parent delivered a tangible reinforcer (e.g., iPod, movie, toys) contingent on drinking from the cup or eating his dinner foods (consistent with predetermined schedule of reinforcement).</td>
</tr>
<tr>
<td>7. Redirect minor problem behaviour</td>
<td>Aidan is redirected back to appropriate behavior by appropriately prompting him to complete the immediate demand (e.g., physically assisting him to the table, raising fork to his mouth), followed by reviewing the visual schedule and the visual contingency map. If Aidan stuffs his mouth during dinner, the “wait” procedure is implemented (see above).</td>
</tr>
</tbody>
</table>
Family functioning measures. Family functioning was measured using two family assessment instruments: (a) the Family Quality of Life Survey (FQOL; Park et al., 2003), and (b) the Parenting Stress Index (PSI; Abidin, 1995). The assessment instruments, described below, were administered to Aidan’s mother once during the baseline phase, once at the end of the maintenance sub-phase of intervention, and once during the follow-up phase.

**Family Quality of Life Survey (FQOL).** The Beach Center FQOL (Park et al., 2003) is comprised of 41 items that assess five family quality of life domains: (a) family interaction, (b) parenting, (c) emotional well-being, (d) physical/material well-being, and (e) disability-related support. For each item, parents rate the level of importance and satisfaction on a Likert-type scale (1 = a little important; 5 = critically important). Psychometric
evaluations of the instrument have shown that it possesses excellent reliability (Cronbach alpha of .94 on importance ratings and .88 on satisfaction ratings) and concurrent validity (correlation coefficients of .68 and .60, p < .001) with well-established measures of quality of life (Hoffman, Marquis, Poston, Summers, & Turnbull, 2006; Park et al., 2003).

**Parenting Stress Index (PSI).** The PSI (Abidin, 1995) is a 120-item self-report questionnaire designed as a screening and diagnostic assessment instrument that identifies parent and child systems which are under stress, and in which deviant development of the child is likely to take place, or where dysfunctional parenting is likely to occur. Items are arranged in a child domain and parent domain and are scored on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Items in the child domain measure those characteristics of the child that make parenting difficult. Items in the parent domain measure those characteristics of the parent and the family context that are sources of stress or represent potential dysfunction of the parent-child system. From a normative sample of 2,633 mothers, the PSI has been standardized for use with parents of children 1 to 12 years of age. Parent responses generate a total stress score that is converted to a percentile score, which is derived from the frequency distribution of the normative sample. Total stress scores between the 15th and 80th percentile are normal and scores at or above the 85th percentile are considered high. The PSI total scale and subscales have shown high internal consistency (Cronbach alpha of .90 or greater for the parent and child domain and the total stress scale). The instrument has a stable three-factor structure (i.e., child domain, parent domain, total stress) and strong construct and predictive validity as evidenced by many studies (Abidin, 1995).
Observer Agreement

Child dependent variables. Two coders (i.e., a fellow graduate student and myself) participated in approximately 2 hours of training in the coding of child-related dependent variables (i.e., child problem behaviour; routine steps completed) prior to measurement of baseline data. A training criterion of 85% agreement on two consecutive observations was required before coding began. To maintain high levels of agreement for child-related dependent variables, we met bi-monthly for review training sessions using previously coded observation files. We independently observed and coded the videotaped sessions at different times.

Problem behaviour. For percentage of intervals of problem behaviour, interobserver agreement checks were conducted on 32.8% of observation session data, balanced across phases. Percentage of observer agreement for problem behaviour ($P_A$) during the target routines were calculated using the following formula: $P_A = N_A / (N_A + N_D) \times 100$. $N_A$ refers to the number of agreements. An agreement was considered when we independently recorded the occurrence of target behaviour during the same 10-second interval. $N_D$ refers to the number of disagreements. The average interobserver agreement for percentage of intervals of problem behaviour across the cup drinking and dinner routines was 94.7% (range, 80.6 – 100%). The average agreement for the cup routine was 93.7% (range, 80.6 – 100%). The average agreement for the dinner routine was 95.8% (range, 88.9 – 100%).

Steps completed. For percentage of steps successfully completed, interobserver agreement checks were completed on 32.8% of observation session data, balanced across phases. Percentage of observer agreement for percentage of steps completed ($P_A$) during the target routines were calculated using the following formula: $P_A = N_A / (N_A + N_D) \times 100$. $N_A$
refers to the number of agreements. An agreement was considered when we independently recorded the same step successfully completed, not completed, or as having no opportunity during the same trial. \(N_D\) refers to the number of disagreements. The average interobserver agreement for steps successfully completed across the cup drinking and dinner routines was 97.8% (range, 75.0 – 100%). The average interobserver agreement for steps successfully completed in the cup routine was 97.7% (range, 75.0 – 100%). The average interobserver agreement for steps successfully completed in the dinner routine was 97.8% (range, 88.9 – 100%).

**Parent implementation fidelity.** Observer training for coding parent implementation fidelity began during the intervention phase after intervention procedures within the behaviour support plan were developed. After detailed operational definitions of support procedures were defined, the graduate student coder and I participated in approximately 3 additional hours of training. A training criterion of 85% agreement across two consecutive observations was required before coding began.

For parent implementation fidelity, interobserver agreement checks were conducted on 45.5% of observation session data, balanced across intervention and follow-up phases. Percentage of observer agreement for parent implementation fidelity \((P_A)\) during the target routines was calculated using the following formula: 

\[ P_A = \frac{N_A}{N_A + N_D} \times 100 \]

\(N_A\) refers to the number of agreements. An agreement was considered when we independently recorded the occurrence of the parent’s accurate use of a support strategy at any point during the same 30-second interval. \(N_D\) refers to the number of disagreements. The average interobserver agreement for parent implementation fidelity across the cup drinking and dinner routines was 97.7% (range, 88.3 – 100%). The average interobserver agreement for parent implementation fidelity
fidelity in the cup routine was 100% (no range). The average interobserver agreement for parent implementation fidelity in the dinner routine was 94.2 (range, 88.3 – 100%).

**Parent and child interaction data.** We also participated in approximately 6 additional hours of training in coding parent and child interaction data using PACCS (Lucyshyn, Laverty, et al., 2007). A training criterion of 80% agreement and minimum Kappa of 0.75 on two consecutive observations was required before coding began. To maintain high levels of agreement for parent and child interaction data, we posed questions in the comment section of the observation file for parent and/or child behaviour that we found difficult to interpret and for which the PACCS coding manual might not have provided adequate direction. After the coding of a file, we attended a consensus meeting to pose these questions and come to an agreement regarding the appropriate way to code the behaviour and/or interaction. The questions were limited to no more than 10% of parent and child codes in any observation file. The purpose of the consensus meeting was to ensure the accuracy of the coding and the calibration of coding between coders when parent and child behaviour were highly nuanced, subtle, or complex and the PACCS coding manual did not provide sufficient direction for what to do in these instances. Lucyshyn et al. (2011) and Binnendyk (2009) employed this procedure in their analyses of coercive parent-child interaction in families of children with developmental disabilities. The procedure is common among research teams coding dyadic interaction in real time because of the complexity of such interaction and the inability of a coding manual to define every possible nuance of parent and child behaviour and interaction (Lucyshyn et al., 2011). All interobserver agreement scores were calculated prior to the consensus meeting between the two coders.
For data measuring parent and child interaction, interobserver agreement checks were held for 20% of observation session data, balanced across baseline and intervention phases. The Observer 5.0 (Noldus et al., 2000) software program’s reliability measurement function was used to compute a Kappa statistic for all parent and child behaviour codes combined, for all parent behaviour categories, and for all child behaviour categories to control for non-occurrence agreements and disagreements (Bakeman & Gottman, 1997; Cohen, 1977). In addition, an interobserver agreement score was computed for each individual parent and child behaviour category.

Across all parent and child behaviour categories, Kappa was 0.87. For all parent behaviour categories, Kappa was 0.83. For all child behaviour categories, Kappa was 0.89. For individual parent behaviour categories, average percentage agreement was as follows: 100% for negative attention, 80.0% for positive contingency, 98.0% for request/demand, 83.9% for reduce request/demand, 91.4% for positive attention, 80.7% for physical assistance, 100% for non-comply, 60.0% for comply, 66.1% for other behaviour, and 83.9% for occupied. For individual child behaviour categories, percentage agreement was: 84.4% for problem behaviour, 94.9% for problem behaviour with non-compliance, 66.7% for problem behaviour with compliance, 100% for non-comply, 93.3% for comply, 79.1% for out of area, 100% for request/demand, 100% for positive attention, 86.7% for other behaviour, and 75.9% for occupied.

**Treatment Fidelity**

Treatment fidelity data were gathered across 22% of observation sessions randomly sampled from intervention and follow-up phases. Treatment fidelity was defined as the percentage of intervals of parent’s accurate use of behaviour support strategies. These data
show high levels of parent accurate use of behaviour support strategies in intervention and follow-up. The overall average percentage of intervals of Aidan’s mother’s accurate use of the behaviour support strategies was 93.3 % (range, 78.3 – 100%). During intervention, parent implementation fidelity was high (M = 91.8%; range, 78.3 – 100). During follow-up, parent accurate use of behaviour support strategies improved to 100% (no range).

Research Design

Two single-subject designs were utilized. An alternating-treatment design tested hypotheses about the functions of Aidan’s problem behaviour. A multiple baseline design across settings assessed the association between implementation of the ecological, family-centered PBS intervention and improvements in child behaviour and participation in two valued family routines. These designs are briefly described below.

Alternating-treatment design. During the assessment of the child’s problem behaviour, a functional analysis was completed to verify hypotheses about the functions of the problem behaviour. An alternating-treatment design (Richards et al., 1999), capable of efficiently identifying variables that control behaviour, was employed. In this design, antecedent and consequent conditions hypothesized to control behaviour are alternated within a series of brief observation sessions (e.g., 3 minutes). The differentiation in the levels of problem behaviour by condition determines the extent to which hypotheses about behaviour functions are confirmed or not. The specific procedures used are described below in the procedures section.

Multiple baseline design across two family routines. A multiple baseline design across two family routines using a multiple probe strategy (Barlow & Hersen, 1984; Horner & Baer, 1978) was used to assess visual association between implementation of the
 ecological, family-centered PBS intervention and improvements in child behaviour and successful participation in the cup drinking and dinner routines. Due to the inclusion of only two settings, the multiple baseline design determined the extent to which the intervention produced two basic effects. To document experimental control, three or more settings would have been necessary (Horner et al., 2005). Thus, the multiple baseline design employed represented a quasi-experimental or empirical case study design.

Each baseline was divided into three phases: (a) baseline; (b) intervention, composed of initial training/support and maintenance support; and (c) follow-up. Measurement initially involved collecting baseline observations in both target settings until the stability of the data within the phase was achieved. When baseline data indicated stability in the first setting, the intervention was introduced in that setting while baseline conditions were maintained in the second setting. The intervention was introduced in the second setting after stable changes in the dependent variables were documented in the first setting. Data collection then continued across phases in both settings in this time-lagged fashion. In accordance with the multiple probe strategy, intermittent observations (i.e., data probes) were collected across the two routines to sample the levels of the dependent variables.

A multiple baseline design across two family routines was employed because it balanced empirical rigor with feasibility. The design permitted a rigorous evaluation of two potential basic effects while at the same time being feasible within the constraints of conducting a Masters Thesis. The multiple probe measurement strategy was selected for similar reasons. It offered a rigorous measurement strategy while reducing the need for resources to maintain continuous recording. The design also reduced the family’s exposure to
problem behaviour, especially during the baseline phase (Kennedy, 2005; Richards et al., 1999).

**Research and Intervention Procedures**

The ecological, family-centered PBS intervention was implemented in the context of a multiple baseline design across two target routines (i.e., cup drinking and dinner). This section focuses on the sequence of research procedures and clinical family support procedures that I implemented across the course of the study.

**Preliminary screening process.** The preliminary screening process (described in the beginning of the chapter) was conducted to determine: (a) the eligibility of the family for participation, (b) whether or not Aidan’s problem behaviour warranted the need for an intensive intervention, (c) whether Aidan’s mother and Aidan engaged in a four-step escape-driven coercive interaction, and (d) to establish structured baselines in the cup drinking and dinner routines. Information gathered from the preliminary screening process was later incorporated into the comprehensive assessment.

**Baseline.** During the baseline phase, all child-related dependent variables (i.e., percentage of intervals of problem behaviour, percentage of steps successfully completed) were measured across the two target routines before the initiation of the comprehensive assessment and plan design procedures. Videotaped observations occurred in the cup drinking and dinner routines in conformance with the multiple baseline design. During an observation probe, Aidan’s mother was first asked to read a one-page summary of the operational definition of each envisioned routine. Aidan’s mother was then asked to implement the envisioned routine with Aidan. Observation probes were conducted in each routine until a stable or increasing trend in child problem behaviour was evidenced in the
graphed data. Finally, the FQOL (Park et al., 2003) and the PSI (Abidin, 1995) were administered to Aidan’s mother to assess the family’s quality of life and relative magnitude of stress in the parent-child system before intervention.

**Intervention.** During the intervention phase, I served as the interventionist and fully implemented the components and steps of the ecological, family-centered PBS approach to assessment and intervention that were described in the first chapter. This was done in conformance with the multiple baseline design.

**Comprehensive assessment.** Comprehensive assessment included: (a) incorporating preliminary screening assessment information (i.e., assessment of family activity settings, a brief function assessment) into the comprehensive assessment, (b) a feeding assessment, (c) the complete functional assessment process (i.e., functional assessment interview, functional observation protocols), and (d) the family ecology assessment.

First, I completed assessment procedures that were initiated during the preliminary screening process. Information gathered from the assessment of family activity settings was included in the comprehensive assessment. Information gathered from the brief functional assessment was incorporated into the functional assessment interview information.

Second, a feeding assessment was conducted due to the selection of two food-related routines being targeted for intervention. It was necessary to gain more information about Aidan’s medical and feeding history. The *Initial Evaluation Form* (Williams & Foxx, 2007) is a questionnaire used to gather information about: (a) the child’s feeding history (e.g., feeding problems, environment, practices, meal patterns), (b) medical information (e.g., medical history, current medical problems, allergies, oral motor status), (c) adaptive behaviour (e.g., feeding skills, behavioural or developmental problems), and (d) motivation
(e.g., favourite foods, materials, activities). This form was given to Aidan’s mother to be completed over the course of three days in order to monitor Aidan’s food consumption. Aidan’s mother reported that Aidan had an extremely limited repertoire of foods and engaged in food refusal behaviours when offered new foods. Aidan’s feeding issues began when he was approximately 2 years old. Aidan’s mother reported that he had no health issues other than being on a gluten/casein-free diet due to allergies. Aidan did not have any physical reason (e.g., inability or difficulty to swallow, acid reflux, sensitive gag reflex) for his food refusal behaviour. The only foods that he would eat at the time of intervention were rice bread with a mixture of hazelnut butter and sugarcane syrup, rice chips, water, and a baby-bottle containing a smoothie mixture (i.e., a combination of fruits, vegetables, oils, vitamins, etc.) developed by his mother to deliver necessary nutrients to Aidan. The bottle of smoothie and the solid foods were given to him in various settings (e.g., on the couch, at the table, in his bed); there were no set meal times for Aidan to sit with his mother at the table.

Third, the full functional assessment interview (FAI) and functional assessment observation protocols, described by O’Neill et al. (1997), were conducted with Aidan’s mother in the family’s home. The FAI was completed in approximately 90 minutes. The FAI included one additional question aimed at identifying the likelihood that coercive patterns of interaction were present within the target routines: What does Aidan do after his mother withdraws her request/demand? After the completion of the interview, Aidan’s mother and I collaboratively integrated the FAI information to develop hypotheses about the functions of Aidan’s problem behaviour.

Several contextual events were identified that set the stage for, but did not directly trigger, Aidan’s problem behaviour: (a) physical factors (e.g., illness, fatigue, satiation), (b)
Aidan engaging in a pre-routine preferred activity (e.g., watching a video, playing with a toy, looking at a book), (c) unpredictable schedule and expectations, (d) a lack of choice during the day, (e) Aidan’s history of bottle use, and (f) his limited food preferences. If one, or any combination, of these setting events was present before or during the target routine, it was more likely that an immediate antecedent event might trigger Aidan’s problem behaviour.

The antecedent events that directly triggered Aidan’s problem behaviour in both the cup drinking and dinner routines included: (a) Aidan’s mother presenting a non-preferred or challenging request/demand to Aidan (e.g., “Come to the table for dinner.” “Have a sip of your water.” “Take a bite of carrot.”), (b) Aidan’s mother physically assisting Aidan to complete a desired task (e.g., guiding him to the table to sit, holding a cup or fork to his mouth to prompt a sip/bite), and/or (c) Aidan’s mother attempting to or removing a preferred item/activity from Aidan (e.g., turning off a video, taking away Aidan’s bottle).

In regard to consequences, Aidan’s mother reported that she often responded to Aidan’s problem behaviour by: (a) withdrawing her requests for Aidan to come to the table, drink from a cup, and/or try new foods; and (b) allowing Aidan continued or extended access to the items and/or activities that he wanted (e.g., watching videos, drinking from his bottle, eating only his preferred foods).

Two hypotheses emerged from the functional assessment information: Aidan engaged in problem behaviours to: (a) escape and/or avoid cup drinking- and dinner-related requests, and (b) to gain or continue his access to preferred items and/or activities.

The validity of hypotheses about the functions of Aidan’s problem behaviour was then tested during a series of experimental manipulations conducted in the family’s home with Aidan’s mother serving as the implementer (Lucyshyn et al., 1997). Three conditions
were designed to test for the presence of escape-motivated, attention-motivated, or tangible-motivated problem behaviour in each of the target routines (i.e., cup drinking and dinner). A fourth condition that predicted the absence of problem behaviour served as a control. For both the cup drinking and dinner routines, the conditions were presented in counterbalanced order across three sessions using a variation of the procedure used by Iwata and colleagues (Iwata et al., 1982). During hypothesis-testing sessions, Aidan’s mother read a procedural description of each condition (see Table 2.7) and then implemented each condition with Aidan for 3 minutes or until the termination criterion for problem behaviour was reached. After a condition was completed, Aidan was allowed to rest for a few minutes. During this pause between conditions, I provided feedback to Aidan’s mother on implementation fidelity, and Aidan’s mother prepared to implement the next condition. I videotaped each session, and the data were later coded using computer-based media viewing software. Problem behaviour was measured as the percentage of intervals of occurrence during each of the conditions. A partial interval recording system was used with an observation interval of 10 seconds. An occurrence was scored if problem behaviour occurred at any point during the interval. The experimental analysis served to confirm or disconfirm the hypothesized function(s) of child problem behaviour in routines.
Table 2.7

*Procedural Descriptions of Each Functional Analysis Condition Across Routines*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cup drinking</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escape</td>
<td>Ask Aidan to sit at the table, provide assistance if necessary. Ask Aidan to take a drink from his cup, provide assistance if necessary. If/when Aidan engages in problem behavior, immediately stop making requests or providing assistance. Step away from Aidan and/or allow him to move away. After 10 seconds, reinitiate requests and assistance to return to his chair and to take a drink from his cup.</td>
<td>Ask Aidan to sit at the table, provide assistance if necessary. Ask Aidan to pick up his utensil, provide assistance if necessary. Ask Aidan to take food on his utensil and eat the food, provide assistance if necessary. If/when Aidan engages in problem behavior, immediately stop making requests or providing assistance. Step away from Aidan and/or allow him to move away. After 10 seconds, reinitiate requests and assistance to return to his chair, to take food on his utensil, and to eat his food.</td>
</tr>
<tr>
<td>Attention</td>
<td>Do not make requests for Aidan to sit or drink at the table. Seat yourself at the table and have a drink. Ignore Aidan. If Aidan engages in problem behavior, respond by going to him and giving him attention (e.g., cuddles, tickles). After 10 seconds, reinitiate drinking your drink and ignoring Aidan.</td>
<td>Do not make requests for Aidan to sit or eat at the table. Seat yourself at the table and eat. Ignore Aidan. If Aidan engages in problem behavior, respond by going to him and giving him attention (e.g., cuddles, tickles). After 10 seconds, reinitiate eating your food and ignoring Aidan.</td>
</tr>
<tr>
<td>Tangible</td>
<td>Place a cup of water on the table in front of Aidan. In addition, place Aidan’s bottle on the table, but ensure that it is out of his reach. Do not place any demands on Aidan and give him continuous, positive, non-demanding attention (e.g., soothing, cuddles, tickles). Ignore and deny any requests by Aidan to obtain his bottle. If Aidan engages in problem behavior, respond by giving him his bottle. After 10 seconds, take away his bottle and reinitiate the above conditions.</td>
<td>Place a plate of non-preferred foods on the table in front of Aidan. In addition, place Aidan’s bottle on the table, but ensure that it is out of his reach. Do not place any demands on Aidan and give him continuous, positive, non-demanding attention (e.g., soothing, cuddles, tickles). Ignore and deny any requests by Aidan to obtain his bottle. If Aidan engages in problem behavior, respond by giving him his bottle. After 10 seconds, take away his bottle and reinitiate the above conditions.</td>
</tr>
<tr>
<td>Control</td>
<td>Go to the room where Aidan is doing an activity. Engage in preferred activities with him. Do not make any requests or demands of Aidan. Continue to deliver attention to your child while playing with him.</td>
<td>Go to the room where Aidan is doing an activity. Engage in preferred activities with him. Do not make any requests or demands of Aidan. Continue to deliver attention to your child while playing with him.</td>
</tr>
</tbody>
</table>
Last, the family ecology assessment (see Appendix F) was completed. The family ecology interview (Albin et al., 1996; Lucyshyn & Albin, 1993) was administered. Aidan’s mother was asked semi-structured, open-ended questions about her family’s goals, strengths, resources and social supports, and sources of stress (see Table 2.8). Results from the comprehensive assessment process were used to develop a technically sound and contextually appropriate behaviour support plan for each target routine.
### Table 2.8

**Results from the Family Ecology Interview**

<table>
<thead>
<tr>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child’s positive contributions</strong></td>
</tr>
<tr>
<td>• Aidan is healthy, happy, energetic, and affectionate</td>
</tr>
<tr>
<td>• Aidan has allowed his mother to have a different perspective on life (e.g., her ability to learn and implement things has increased)</td>
</tr>
<tr>
<td><strong>Family strengths</strong></td>
</tr>
<tr>
<td>• Aidan has strong and loving support in his mother</td>
</tr>
<tr>
<td>• Mother is extroverted and likes to meet new people and try new things</td>
</tr>
<tr>
<td>• Mother is truly there for Aidan and is doing the best she can do to give her son the best care possible</td>
</tr>
<tr>
<td>• Mother is organized and on top of learning about and obtaining new services</td>
</tr>
<tr>
<td>• Mother tries to expose Aidan to new opportunities and is open to new ideas in supporting her son</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
</tr>
<tr>
<td>• Aidan attends school in the mornings and a daycare in the afternoon on a daily basis</td>
</tr>
<tr>
<td>• Aidan receives early behavioral intervention services twice a week (i.e., 6 hours/week)</td>
</tr>
<tr>
<td>• Aidan has access to a private occupational therapist and a speech and language pathologist</td>
</tr>
<tr>
<td>• Mother makes time to exercise with a friend on a weekly basis and will try to participate in a social outing at least once a month</td>
</tr>
<tr>
<td><strong>Stressors</strong></td>
</tr>
<tr>
<td>• Sleeping issues – Aidan sometimes wakes up in the middle of the night, causing his mother to lose needed sleep, sometimes resulting in missed work days</td>
</tr>
<tr>
<td>• Community outings – Aidan’s mother has difficulties with Aidan’s behavior in the community, especially in transitioning away from preferred activities</td>
</tr>
<tr>
<td>• Eating issues – Aidan will only eat a small repertoire of foods (e.g., toast, rice chips, smoothies), which may lead to nutritional concerns</td>
</tr>
<tr>
<td>• Feelings of isolation – Aidan’s mother does not have any close family or social support, leaving her as the sole caregiver to Aidan</td>
</tr>
<tr>
<td>• Maternal health issues – the above stressors have resulted in health issues for Aidan’s mother (e.g., stomach issues, fatigue)</td>
</tr>
<tr>
<td>• General workload stress – the everyday stress Aidan’s mother experiences in her workplace</td>
</tr>
</tbody>
</table>
Goals

<table>
<thead>
<tr>
<th>Child-centered goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>• For Aidan to grow, live a great life, and to become as independent as possible</td>
</tr>
<tr>
<td>• To understand his environment</td>
</tr>
<tr>
<td>• To gain independent life skills (e.g., eating, toileting, dressing)</td>
</tr>
<tr>
<td>• To increase his social skills with the hope of making friends</td>
</tr>
<tr>
<td>• To increase his communication skills</td>
</tr>
<tr>
<td>• To be happy and live a fun life</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mother’s goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To set up a support system for Aidan for when she is not around in the future</td>
</tr>
<tr>
<td>• To have a close community/better relationships with people</td>
</tr>
<tr>
<td>• To learn different strategies to help Aidan in terms of his problem behaviour</td>
</tr>
<tr>
<td>• To find ways to deal with her own stress in better ways in order to live a healthier, happier life</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Future family goals</th>
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</thead>
<tbody>
<tr>
<td>• To be able to go places (e.g., out for dinner, friend’s homes, community events, travelling)</td>
</tr>
<tr>
<td>• To have better communication between Aidan and his mother</td>
</tr>
<tr>
<td>• For Aidan to have a male role model/buddy/presence</td>
</tr>
</tbody>
</table>
**Behaviour support plan development.** I developed an individualized behaviour support plan for the targeted home-based routines in collaboration with Aidan’s mother (see Appendix G for the full version of the plan). Support plans for each routine were developed in a step-wise (i.e., lagged) fashion in conformance with the multiple baseline design. The development of the behavioural support plan had four steps. First, functional assessment results were used to develop a summary statement/competing behaviours pathways diagram for individual routines. See Figure 2.1 for the aggregated summary statement/competing diagram for the cup drinking and dinner routines. The diagram guided the design of a technically sound plan that rendered problem behaviours irrelevant, ineffective, and inefficient at achieving their purpose (O'Neill et al., 1997).
Figure 2.1. Summary statement/competing pathways diagram for the cup drinking and dinner routines.
Second, for each feature of the problem in the competing behaviours pathways diagram for a routine (i.e., setting events, antecedents, problem behaviour, maintaining consequences), a logically-linked behaviour support strategy was generated. Behaviour support strategies were selected from four broad categories of empirically validated interventions: (a) setting event strategies, (b) preventative strategies, (c) teaching strategies, and (d) consequence strategies. See Table 2.9 for a summary of the behaviour support strategies for the cup drinking and dinner routines.
Table 2.9

**Summary of Behaviour Support Strategies**

<table>
<thead>
<tr>
<th>Setting event strategies</th>
<th>Preventative strategies</th>
<th>Teaching strategies</th>
<th>Consequence strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Address any physical factors that may affect the target routines (e.g., satiation, illness, and fatigue).</td>
<td>1. Use a visual schedule to provide a visual representation of each step required to complete both the cup and dinner routines.</td>
<td>1. Teach Aidan how to read and understand the symbols that represent each step of his visual schedules.</td>
<td>1. Reinforce Aidan for successful compliant behavior and for routine steps completed.</td>
</tr>
<tr>
<td>2. Limit Aidan’s pre-routine access to highly preferred items/activities and conduct the routine in a distraction free environment.</td>
<td>2. Use a visual contingency map to provide a visual representation of the positive and negative expectations within the routine.</td>
<td>2. Teach Aidan how to read and understand the expectations of the routine on his visual contingency map.</td>
<td>2. Reinforce Aidan for asking appropriately for more time/a break.</td>
</tr>
<tr>
<td>3. Provide Aidan with a predictable schedule and clear expectations.</td>
<td>3. Use a “more time/break” visual to cue Aidan to ask for more time/a break appropriately.</td>
<td>3. Teach Aidan how to appropriately request for more time to play or for a break from the routine using the “more time/break” visual.</td>
<td>3. Redirect minor problem behaviors by: (a) appropriately prompting Aidan to complete the immediate demand; (b) reviewing the visual schedule, the expectations of the routine, and/or reviewing what he will receive upon successful completion; (c) reminding him that he can have more time/a break; and/or (d) if he is stuffing his mouth during dinner, use the “wait” procedure.</td>
</tr>
<tr>
<td>4. Offer Aidan choice of the materials that will be used in the routine (e.g., reinforcer, cup, utensils).</td>
<td>4. Ensure that your requests for Aidan to participate in the routine are the clear antecedents to his appropriate compliance.</td>
<td>4. Teach Aidan to try and eat new foods.</td>
<td></td>
</tr>
<tr>
<td>5. The interventionist will promote initial change in the routine with Aidan and transfer stimulus control to Aidan’s mother when appropriate.</td>
<td>5. Introduce new foods to Aidan by fading in the type of food.</td>
<td>5. Teach Aidan appropriate eating using the “wait” procedure.</td>
<td></td>
</tr>
<tr>
<td>6. Promote the generalized expansion of Aidan’s diet by selecting meals from foods identified using general case programming and a preference assessment.</td>
<td>6. Increase the portion size of new foods eaten by Aidan by fading in increasing amounts of food.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>7. Use the “wait” procedure to promote appropriate eating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Escape extinction for major problem behavior: (a) stay calm/neutral; (b) block any major problem behaviours; (c) physically assist Aidan to the table to sit in his chair; (d) block him from leaving the table; (e) use the non-removal of cup/fork procedure; and (f) redirect him back to the routine.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Third, Aidan’s mother and I reviewed family ecology information to ensure that the plan was not only technically sound but also contextually appropriate. Lucyshyn, Kayser, et al. (2002) suggested that gathering information about the elements of family activity settings (e.g., time and place, resources, tasks) and the larger ecology of the family (e.g., family strengths, social supports, stressors) can contribute to the design of a contextually appropriate PBS plan. A summary of contextual fit considerations for Aidan’s family is summarized below in Table 2.10.
Table 2.10

*Contextual Fit Considerations*

| Behaviour support for non-target problematic family routines | • Sleeping issues have a significant impact on Aidan’s mother’s stress and functioning; therefore, the research team will offer behavior support in the bedtime routine once the dinner routine is in the maintenance phase of the research project. The timing of this support is based upon maintaining the integrity of the research design.  
• Aidan’s behavior consultant, behavior interventionist (BI), and respite worker will be invited to collaborate and learn the strategies involved with the cup and dinner routines to allow Aidan’s mother the option to leave Aidan in the care of these individuals when she feels the need to “get away” for a period of time. |
| Teach mother stress management and coping skills | • Dr. Lucyshyn will offer Aidan’s mother training in mindfulness practices. The aim is to provide her with a method to promote personal well-being, and with specific strategies to clear her mind of what is causing her stress in the moment so that she can approach her daily responsibilities from a calm and more “present” state of mind.  
• Aidan’s mother will be encouraged to continue her participation in her monthly parent support group. |
| Increased free time and social opportunities | • During the initial sessions of the initial training phase of each target routine, Stephen will take the lead in implementing the behavior support strategies with Aidan to allow Aidan’s mother the option of staying in the home for the duration of the routine or to have some free time in which she can participate in an activity of her choosing (e.g., approximately 1 hour of free time).  
• Aidan’s mother will plan to have at least one social day/night for herself every month to increase her enjoyment and social opportunities. |
Fourth, the behaviour support strategies for each target routine were condensed into two-page implementation checklists (see Appendix H) to be used by Aidan’s mother throughout the intervention phase as a self-monitoring and self-management tool to promote implementation fidelity during the initial parent training and maintenance sub-phases, and long-term maintenance during the follow-up phase. Following the design of the behaviour support plan and the implementation checklists for the cup drinking and dinner routines, an implementation plan was designed in collaboration with Aidan’s mother. The implementation plan defined: (a) training materials and support activities that were used to empower Aidan’s mother to implement behaviour support strategies, (b) roles and responsibilities, and (c) a timeline for completing the support process. See Table 2.11 for a summary of the implementation plan.
Table 2.11

**Summary of the Implementation Plan**

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Support activities</strong></td>
</tr>
<tr>
<td>• Written positive behaviour support plan</td>
</tr>
<tr>
<td>• Brief, routine specific plans</td>
</tr>
<tr>
<td>• Development of training materials (e.g., visual schedule, visual contingency board)</td>
</tr>
<tr>
<td>• Direct interventionist (i.e., student researcher) training with Aidan</td>
</tr>
<tr>
<td>• Parent training (e.g., modeling of interventions, instruction, feedback, role-playing)</td>
</tr>
<tr>
<td>• Team meetings to review progress, practice intervention strategies, and problem solve</td>
</tr>
<tr>
<td>• Use of implementation checklists for self-monitoring and self-evaluation</td>
</tr>
<tr>
<td><strong>Roles and responsibilities</strong></td>
</tr>
<tr>
<td>• Aidan’s mother – primary implementer of the behaviour support plan</td>
</tr>
<tr>
<td>• Student researcher – responsible for intensive interventionist training; implementation support to Aidan’s mother; coordination of support activities</td>
</tr>
<tr>
<td>• Principal investigator – mindfulness training for Aidan’s mother</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
</tr>
<tr>
<td>• Six months of training and support across the cup drinking and dinner routines</td>
</tr>
<tr>
<td>• Four months of maintenance support across the cup drinking and dinner routines</td>
</tr>
</tbody>
</table>
Implementation support. Three phases of implementation support were sequentially introduced: (a) intensive interventionist training, (b) initial training and support with the parent, and (c) maintenance support.

Intensive interventionist training. I initially served as the interventionist and implemented the strategies of the behaviour support plan in each target routine (i.e., in conformance with the multiple baseline design) during the intensive interventionist training (IIT) phase. The purpose of me taking the lead in implementing the behaviour support strategies with Aidan was to establish stimulus control in both the cup drinking and dinner routines before transferring stimulus control to Aidan’s mother. Prior to beginning IIT, I developed and gathered the materials necessary for implementation (e.g., visual supports, reinforcers). IIT sessions occurred two to three times a week for both the cup drinking and dinner routines until stimulus control was clearly established (i.e., three consecutive sessions of near-zero levels of problem behaviour and a minimum of 85% of the routine steps successfully completed).

The IIT phase for the cup drinking routine occurred during two separate periods. I established stimulus control during the first IIT period following six sessions of approximately 60 minutes per session. Stimulus control was successfully transferred to Aidan’s mother but the strategies utilized in the first IIT were too complicated, leading to unacceptable completion times for Aidan to finish drinking from his cup with his mother (i.e., approximately 30-40 minutes to drink a small cup of liquid). The cup drinking behaviour support strategies were simplified and I re-established stimulus control during the second IIT period in seven sessions of approximately 20 minutes per session. The IIT phase for the dinner routine lasted for 25 sessions of approximately 45 minutes per session. The
extended length of time to complete the initial training sub-phase was due to: (a) initial difficulty finding a strong enough reinforcer to motivate food acceptance, and (b) a break from intervention due to the holiday period from December to January. Once a powerful reinforcer was identified (i.e., an iPod Touch with learning apps) after the holiday break, I quickly established stimulus control in the dinner routine (i.e., nine sessions of approximately 45 minutes per session). The transfer of stimulus control to Aidan’s mother began once Aidan successfully ate five new foods with me with near-zero levels of problem behaviour.

Initial parent training. During the initial parent training (IPT) phase, I implemented a flexible but common set of behavioural parent training strategies for each target routine. These activities included: (a) a written behaviour support plan that summarized functional assessment results and described behaviour support plan procedures in terms accessible to Aidan’s mother; (b) a two-page implementation checklist, comprised of a bulleted list of behaviour support strategies and a rating scale for Aidan’s mother to self-evaluate her level of implementation; (c) modeling of interventions by me for Aidan’s mother; (d) coaching Aidan’s mother in the use of the interventions using prompts, feedback, and social reinforcement (O'Dell, 1985); (e) behavioural rehearsal via role-play activities in the home in which Aidan’s mother practiced the use of procedures under simulated conditions; and (f) home meetings with Aidan’s mother to review progress, acknowledge successes, role-play specific support strategies, and discuss and solve problems in implementation fidelity or intervention effectiveness. Training and support activities occurred one to three times a week, depending on the family’s schedule.

I transferred stimulus control to Aidan’s mother by slowly fading in her participation into the target routines. For both the cup drinking and dinner routines, Aidan’s mother was
initially involved by delivering the reinforcer to Aidan upon his successful attempts at
drinking from the cup or taking a bite of new food after I presented requests to Aidan. When
Aidan demonstrated stable acceptance of his mother’s reinforcement, Aidan’s mother began
to present intermittent requests to Aidan to either take a sip or to have a bite of food. I faded
out the frequency of my requests as Aidan’s mother increased the frequency of her requests.
Aidan’s mother implemented the routine exclusively when her requests were reliably
successful at gaining her son’s compliance (i.e., the constructive pattern of parent-child
interaction emerged).

As mentioned above, the original behaviour support strategies for the cup drinking
routine were too complex and resulted in extended completion times for Aidan to drink a
small cup of liquid. Aidan’s mother implemented 12 IPT sessions (approximately 30-40
minutes per session) before support strategies were simplified to reduce the amount of time it
took for Aidan to drink a cup of liquid. Two observation probes were collected during the
first period of IPT. The second period of IPT sessions lasted for 13 sessions with a reduced
time of approximately 15 minutes per session. Five observation probes were collected during
the second period of IPT in the cup drinking routine.

The IPT phase for the dinner routine lasted for 23 sessions of approximately 45
minutes per session. Ten observation probes were collected during the IPT phase for the
dinner routine.

Maintenance support. After stable and meaningful improvements in Aidan’s
behaviour and routine participation were observed, the routine entered the maintenance
support phase. The focus during the maintenance support phase was to empower Aidan’s
mother to become self-sufficient in her use of the support strategies and to prevent a relapse
toward the coercive process. A maintenance support plan (see Appendix I), consisting of the following tools, was developed and used during the maintenance support sessions: (a) revised implementation checklists, which contained only the core strategies necessary to maintain improvements in Aidan’s behaviour and routine participation; (b) a coercive process assessment tool, which assessed the reoccurrence of coercive processes in target routines; and (c) a relapse prevention plan, which identified obstacles to maintenance that could lead to a regression and solutions that would help Aidan’s mother continue to effectively support Aidan, prevent future setbacks from occurring, and successfully recover when future setbacks occurred. Aidan’s mother was encouraged to utilize these tools at least once a week to facilitate maintenance in my absence.

I provided maintenance support to Aidan’s mother in the cup drinking routine approximately once every 2 to 4 weeks for approximately 30 minutes over a total of 10 sessions. Eighteen observation probes were collected during the maintenance support phase for the cup routine. Maintenance support in the dinner routine was conducted approximately once every 2 to 3 weeks for approximately 40 minutes over a total of seven sessions. Nine observation probes were collected during the maintenance support phase for the dinner routine.

**Follow-Up.** The follow-up phase for each target routine began after Aidan’s mother had demonstrated independent success: (a) in implementing the behaviour support strategies of the plan, resulting in improved behaviour from Aidan; and (b) in using the relapse prevention techniques to recognize and overcome obstacles to maintenance in family activity settings (e.g., illness, vacation). Follow-up observation sessions in the cup drinking and dinner routines took place at 1-, 5-, and 8-months post-intervention. Behaviour support
“booster” sessions for both target routines were conducted after the 1- and 5-month follow-up observation probes were conducted; there was no need for a booster session after the 8-month follow-up observation probes were collected due to the success of Aidan and his mother in both routines.
CHAPTER THREE

Results

Results from multiple dependent variables were used to investigate: (a) the survivability (i.e., effectiveness, acceptability, sustainability, and durability) of the ecological, family-centered PBS intervention with a family of a child with a developmental disability and problem behaviour, (b) the presence of coercive processes operating in valued but problematic family routines during baseline, (c) the transformation of coercive processes into constructive processes of parent-child interaction during intervention, and (d) whether implementation of the intervention and the transformation of coercive processes into constructive processes were associated with improvements in family functioning.

Results from the functional analysis and of the implementation of the ecological, family-centered PBS intervention are presented in this chapter. Seven dependent variables were examined: (a) percentage of intervals of problem behaviour, (b) percentage of steps successfully completed in the routine, (c) conditional probabilities of coercive processes and constructive processes, (d) average rating of the social validity of the support effort, (e) average index of the support plan’s “goodness-of-fit” with the family’s ecology, (f) percentage of intervals of parent’s accurate use of behaviour support plan strategies, and (g) family functioning scores from the Family Quality of Life Survey (FQOL; Park et al., 2003) and Parenting Stress Index (PSI; Abidin, 1995).

Functional Analysis Results

Figure 3.1 presents session-by-session functional analysis data, by condition, for percentage of intervals of problem behaviour for each of the target routines (i.e., cup drinking and dinner). The visual inspection of the differentiation in the levels of problem behavior by
condition determined the extent to which functional assessment hypotheses about functions of problem behaviour were confirmed.

*Figure 3.1. Functional analyses of child problem behaviour.*
For the cup drinking routine, the data indicate that the Escape condition produced the highest average percentage of intervals of problem behavior ($M=80.5\%$; range, 67 – 94\%). A secondary function of problem behaviour also was present; the Tangible condition produced the next highest average of intervals of problem behaviour ($M=65.3\%$; range, 50 – 78\%).

For the dinner routine, the Escape condition produced the highest percentage of intervals of problem behaviour ($M=78\%$; range, 67 – 100\%). A tangible function also served as a secondary function of problem behaviour in this routine ($M=59.8\%$; range, 22 – 100\%).

Taken together, these data indicate that the primary function of Aidan’s problem behavior was to escape from routine-related demands. A secondary function of gaining a preferred item or activity (i.e., a tangible function) also was present in both target routines.

**Multiple Baseline Design Results**

A quasi-experimental, multiple baseline design across two family routines was used to examine whether implementation of the ecological, family-centered PBS intervention was associated with two basic effects; that is, substantial and socially valid: (a) decreases in the percentage of intervals of child problem behaviour, and (b) increases in the percentage of steps successfully completed in the cup drinking and dinner routines.

Measures of child problem behaviour and steps completed were analyzed using visual analysis procedures (Horner et al., 2005; Kennedy, 2005; Parsonson & Baer, 1986). Observation probe data for percentage of intervals of problem behaviour and percentage of steps successfully completed were graphed and visually analyzed. Visual analysis involved the examination of the level, trend, and variability of the data points within and across baseline, intervention, and follow-up phases. The analysis of basic effects associated with implementation of the intervention involved visually analyzing the immediate change in the
level of behaviour at the point of intervention in both target routines (i.e., the phase change between baseline and intervention). Success within the target routines was defined as: (a) problem behaviour decreasing to low or near-zero levels (i.e., less than 10% of intervals with no more than low intensity or trivial behaviours), (b) routine steps successfully completed increasing to 80% or more of total steps in a target routine, and (c) the parent evaluating the outcomes of intervention in routines as acceptable and important (i.e., socially valid).

Figure 3.2 displays: (a) the two target routines (i.e., cup drinking and dinner), (b) the phases of each routine (i.e., baseline, intervention, and follow-up), and (c) the observation probe data points indicating percentage of intervals of problem behaviour and routine steps successfully completed. Data in the intervention phase were collected across two sub-phases, initial training and maintenance. The initial training phase was divided into two further sub-phases: intensive interventionist training (IIT) and initial parent training (IPT). IIT involved me implementing the intervention strategies until stimulus control was established in the target routine. IPT began once stimulus control was transferred to Aidan’s mother and she became the primary interventionist in the target routine.

Results indicated that two basic effects were associated with implementation of the intervention and changes in behaviour across the two target routines. Overall, results documented substantial improvements at the point of intervention in child problem behaviour and routine steps successfully completed in the cup drinking and dinner routines. These results are presented below.
Figure 3.2. Percentage of intervals of problem behaviour and percentage of steps successfully completed. Note. IIT = Intensive Interventionist Training; IPT = Initial Parent Training.
Percentage of intervals of child problem behaviour. Figure 3.2 displays the percentage of intervals of child problem behaviour across the cup drinking and dinner routines. These data evidence a robust improvement from baseline to intervention, with high levels of problem behaviour during baseline followed by an immediate decrease in problem behaviour at the point of intervention in both routines. Durability of these improvements is demonstrated in the low levels of problem behaviour during follow-up at 1-, 5-, and 8-months post-intervention. To be sure, problem behaviour was not completely eliminated in either of the target routines. However, Aidan’s mother viewed most of the remaining problem behaviour as trivial (e.g., low-intensity drumming on the table, complying to requests outside the defined window of 10 seconds), as Aidan drank successfully from his cup and ate all of the foods presented to him at meal times.

Cup drinking routine. Baseline data show high and fairly stable levels of problem behaviour. Aidan drank all of the water from his cup in the second baseline observation session, which resulted in a lower level of problem behaviour for that data point (46.2%). Baseline observation sessions were continued until the stability of the data was reestablished. The average percentage of intervals of problem behaviour in baseline for the cup routine was 85.8% (range, 46.2 – 96.5%). Marked improvement in problem behaviour occurred from baseline to intervention; initial training data show that problem behaviour dropped to an average of 13.9% (range, 2.6 – 23.1%). Improvements in behaviour continued across the maintenance sub-phase, resulting in an 8.0% average level of problem behaviour (range, 0 – 22.2%), with periodic variability. Aidan’s mother viewed this variability as trivial. The cup drinking routine in the maintenance sub-phase lasted a very short time (e.g., 1-5 minutes) and thus relatively infrequent occurrences of problem behaviour resulted in disproportionately
higher percentages of intervals of problem behaviour. In addition, the problem behaviours that were observed (e.g., drumming on the table) were considered minor by Aidan’s mother in that they did not affect the overall success of the routine. During follow-up, problem behaviour improved slightly from maintenance to an average of 7.9% (range, 0 – 23.8).

**Dinner routine.** Data for the dinner routine show a high and stable level of problem behaviour ($M = 89.3\%$; range, 71.6 – 98.8%) during the baseline phase. Initial training data show a precipitous decrease in problem behaviour at the point of intervention ($M = 9.6\%$; range, 0 – 22.6%). The variability of the data in the initial training sub-phase was due to the emergence of Aidan’s low-intensity drumming on the table (i.e., originally defined and coded as banging/pounding on surfaces in the Disruptive/Destructive/Dangerous problem behaviour category). Initial training observation sessions continued to be collected until the data indicated stable, near-zero levels of problem behaviour. A small regression in problem behaviour was observed during the maintenance sub-phase ($M = 12.3\%$; range, 1.0 – 36.7%). This increase in problem behaviour was due to the reemergence of Aidan’s drumming on the table during two dinner routine observation sessions. Levels of problem behaviour in the dinner routine recovered to acceptable levels during the follow-up phase ($M = 8.6\%$; range, 2.0 – 13.6%).

**Percentage of steps successfully completed.** Figure 3.2 also displays the percentage of steps successfully completed by Aidan in the cup drinking and dinner routines. A clear change in the levels of steps successfully completed in both target routines was evident across baseline and intervention. Overall, the data show that during baseline, Aidan completed low or near-zero levels of routine steps across both routines. During intervention, a marked improvement in steps successfully completed was evidenced at the point of
intervention for the two target routines. Follow-up data evidenced maintenance of these improvements up to 8-months post-intervention.

**Cup drinking routine.** The average percentage of steps successfully completed in baseline for the cup routine was low and stable ($M = 4.2\%$; range, $0 – 25.0\%$). Initial training data indicate that steps completed increased dramatically to an average of $92.4\%$ (range, $66.7 – 100\%$). Improvements in routine success continued across the maintenance sub-phase, resulting in a $97.8\%$ average level of steps completed (range, $80.0 – 100\%$). During follow-up, the percentage of steps successfully completed improved even further to an average of $100\%$ (no range).

**Dinner routine.** Data for the baseline phase of the dinner routine indicate a low and stable level of steps successfully completed ($M = 2.8\%$; range, $0 – 11.1\%$). Initial training data show a dramatic increase in the average percentage of steps completed at the point of intervention ($M = 98.9\%$; range, $88.9 – 100\%$). Maintenance sub-phase data indicate a slight regression in the average percentage of steps successfully completed from initial training to $97.5\%$ (range, $88.9 – 100\%$). Percentage of steps successfully completed continued to decrease slightly during the follow-up phase to $96.3\%$ (range, $88.9 – 100\%$). The decreases in steps successfully completed during the maintenance sub-phase and follow-up phase were considered minor due to the trivial nature of problem behaviour (i.e., not complying to a request within 10 seconds, drumming on the table with his fork) that occurred during the routines. Aidan missed completing a single routine step (i.e., coming to the table when called or using utensils to eat food appropriately) in only three observation sessions. These decreases in steps completed also were considered trivial because the average percentage of
steps successfully completed during the baseline sub-phase (97.5%) and follow-up phase (96.3%) remained at very high levels in comparison to baseline (2.8%).

**Conditional Probability of Coercive Processes and Constructive Processes**

*Conditional probability of coercive processes.* Figure 3.3 presents the results of the sequential analysis of coercive processes, aggregated across the cup drinking and dinner routines, for the baseline and intervention phases. Results show: (a) the observed joint frequencies (JNTF) of target behaviours, (b) the conditional probabilities (CONP) of target behaviours given criterion behaviours, (c) the adjusted residuals (ADJR; i.e., binomial z-score equivalents), and (d) the probability values ($p$) for escape-driven coercive processes across baseline and intervention. A “:” to the right of an ADJR indicates that the data in that particular sequential analysis did not meet conditions for a normal distribution. As a normal distribution is an assumption for the sequential analysis, these data are considered questionable in regard to their statistical significance (Lucyshyn et al., 2011). Results across baseline and intervention phases for two-, three-, and four-step escape-driven coercive processes are summarized below.
<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>JNTF</td>
<td>157</td>
<td>0</td>
</tr>
<tr>
<td>CONP</td>
<td>.62</td>
<td>.00</td>
</tr>
<tr>
<td>ADJR</td>
<td>2.13</td>
<td>-.66</td>
</tr>
<tr>
<td>p</td>
<td>.03+</td>
<td>.10-</td>
</tr>
<tr>
<td>Parent</td>
<td>Request/Demand</td>
<td>Request/Demand</td>
</tr>
<tr>
<td></td>
<td>Withdraw Demand</td>
<td>Withdraw Demand</td>
</tr>
<tr>
<td>Child</td>
<td>Problem Behaviour</td>
<td>Problem Behaviour</td>
</tr>
<tr>
<td></td>
<td>Acceptable Behaviour</td>
<td>Acceptable Behaviour</td>
</tr>
<tr>
<td>JNTF</td>
<td>252</td>
<td>108</td>
</tr>
<tr>
<td>CONP</td>
<td>.85</td>
<td>.43</td>
</tr>
<tr>
<td>ADJR</td>
<td>24.3</td>
<td>4.68</td>
</tr>
<tr>
<td>p</td>
<td>.000+</td>
<td>.000+</td>
</tr>
</tbody>
</table>

Figure 3.3. Sequential analyses of steps in the coercive sequence at lag 1 during baseline and intervention. Note. JNTF = observed joint frequency; CONP = conditional probability; ADJR = adjusted residual; p = probability value; a colon “:” to the right of an adjusted residual indicates that the data in this particular sequential analysis did not meet conditions for a normal distribution. As a normal distribution is an assumption for the sequential analysis, these data are considered suspect (i.e., questionable) in regard to their statistical significance (Lucyshyn et al., 2011).
**Two-step coercive processes.** Figure 3.3 presents conditional probability data that indicate the existence of statistically significant two-step coercive processes (i.e., parent demand → child problem behaviour) during the baseline phase but not during the intervention phase. Aidan engaged in high rates of problem behaviour contingent upon his mother’s presentation of routine-related demands (JNTF = 252) during baseline. The conditional probability of the two-step coercive process was .85 with an adjusted residual of 24.31 ($p \leq .0000+$), indicating that very strong and stable (i.e., statistically significant) two-step escape-driven parent-child interaction existed during baseline in the cup drinking and dinner routines.

During intervention, parent requests/demands followed by child problem behaviour occurred at a dramatically reduced frequency (JNTF = 1). The conditional probability of the first two steps of the escape-driven coercive process was .00 (ADJR = -4.47; $p < .06+$). This indicates that parent-child interaction involving the first two steps of the coercive process was statistically non-significant during the intervention phase; the two-step escape-driven coercive process almost disappeared entirely after the cup drinking and dinner routines moved into intervention.

**Three-step coercive processes.** The presence of statistically significant three-step coercive parent-child interaction (i.e., parent demand → child problem behaviour → parent withdraw demand) during baseline but not during intervention is shown in Figure 3.3. During baseline, the first three steps of the escape-driven coercive process occurred at a relatively high frequency (JNTF = 157). These three-step coercive processes were statistically significant; the conditional probability of Aidan’s mother withdrawing her requests during
the cup drinking and dinner routines contingent upon Aidan’s problem behaviour was .62 with an adjusted residual of 2.13 ($p < .03+$).

In the intervention phase, the three-step escape-driven coercive parent-child interaction did not occur. Aidan’s mother did not withdraw any demands from Aidan contingent upon his problem behaviour (JNTF = 0) during intervention. The conditional probability of the three-step, escape driven coercive process was .00 and was not statistically significant (ADJR = -1.66; $p < .10$).

**Four-step coercive processes.** Figure 3.3 presents conditional probability data that indicate the existence of statistically significant four-step coercive processes (i.e., parent demand $\rightarrow$ child problem behaviour $\rightarrow$ parent withdraw demand $\rightarrow$ child terminates problem behaviour) during the baseline phase but not during the intervention phase. During baseline, Aidan’s mother frequently withdrew her routine-related demands of Aidan, which was often followed by Aidan returning to a state of calm within the drinking from a cup or eating dinner routines (JNTF = 108). The conditional probability of the four-step coercive process was .43 with an adjusted residual of 4.68 ($p \leq .0000+$), indicating that very strong and stable (i.e., statistically significant) four-step escape-driven parent-child interaction existed during baseline in the cup drinking and dinner routines.

During intervention, conditional probability data indicate that the occurrence of the four-step coercive pattern of parent-child interaction was no longer statistically significant. There were no occurrences of the coercive process (JNTF = 0); therefore, the conditional probability was .00 (ADJR = -.92; $p \leq .36$). Overall, intervention data show that the full, four-step coercive pattern of interaction no longer operated in the cup drinking and dinner routines.
Conditional probability of constructive processes. Figure 3.4 presents the results of the sequential analysis of constructive processes, aggregated across the cup drinking and dinner routines, for the baseline and intervention phases. Results show: (a) the observed joint frequencies (JNTF) of target behaviours, (b) the conditional probabilities (CONP) of target behaviours given criterion behaviours, (c) the adjusted residuals (ADJR; i.e., binomial z-score equivalents), and (d) the probability values (p) for constructive processes across baseline and intervention. A “:” to the right of an ADJR indicates that the data in that particular sequential analysis did not meet conditions for a normal distribution. As a normal distribution is an assumption for the sequential analysis, these data are considered questionable in regard to their statistical significance (Lucyshyn et al., 2011). Results across baseline and intervention phases for two-, three-, and four-step constructive processes are summarized below.
**Baseline**

<table>
<thead>
<tr>
<th></th>
<th>Request/Demand</th>
<th>Positive Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent</strong></td>
<td>JNTF = 3</td>
<td>CONP = .60</td>
</tr>
<tr>
<td></td>
<td>ADJR = 2.23:</td>
<td>( p = .02^+ )</td>
</tr>
<tr>
<td><strong>Child</strong></td>
<td>JNTF = 5</td>
<td>CONP = .02</td>
</tr>
<tr>
<td></td>
<td>ADJR = 4.45:</td>
<td>( p = .000^- )</td>
</tr>
</tbody>
</table>

**Intervention**

<table>
<thead>
<tr>
<th></th>
<th>Request/Demand</th>
<th>Positive Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent</strong></td>
<td>JNTF = 187</td>
<td>CONP = .82</td>
</tr>
<tr>
<td></td>
<td>ADJR = 14.14</td>
<td>( p = .000^+ )</td>
</tr>
<tr>
<td><strong>Child</strong></td>
<td>JNTF = 0</td>
<td>CONP = .00</td>
</tr>
<tr>
<td></td>
<td>ADJR = -.50</td>
<td>( p = .06^- )</td>
</tr>
</tbody>
</table>

*Figure 3.4. Sequential analyses of steps in the constructive sequence at lag 1 during baseline and intervention. Note. JNTF = observed joint frequency; CONP = conditional probability; ADJR = adjusted residual; \( p \) = probability value; a colon “:” to the right of an adjusted residual indicates that the data in this particular sequential analysis did not meet conditions for a normal distribution. As a normal distribution is an assumption for the sequential analysis, these data are considered suspect (i.e., questionable) in regard to their statistical significance (Lucyshyn et al., 2011).*
Two-step constructive processes. Figure 3.4 presents conditional probability data that indicate that two-step constructive processes (i.e., parent demand → child compliance) did not exist between Aidan and his mother during the baseline phase in the cup drinking and dinner routines, but robustly emerged in parent-child interaction during the intervention phase. During baseline, Aidan engaged in low relative frequencies of compliance behaviour contingent upon his mother’s presentation of routine-related demands (JNTF = 5). The conditional probability of the two-step constructive process was .02 with an adjusted residual of -4.45: \( p \leq 0.0000 \) suggesting that a stable process in the opposite of the predicted direction was present. However, as indicated by the colon (“:”) notation following the adjusted residual statistic (e.g., 4.45:), these data do not meet conditions for a normal distribution upon which the statistical analysis is based. Thus, the statistical significance of this result is suspect (Lucyshyn et al., 2011). Nevertheless, these data clearly show that a two-step constructive process was not present during baseline.

During intervention, the first two steps of the constructive process (i.e., Aidan complying to his mother’s requests/demands) increased dramatically (JNTF = 228). The conditional probability of the first two steps of the constructive process was .95 (ADJR = 22.67; \( p < .0000 \)). This indicates that a stable, two-step constructive process of parent-child interaction robustly emerged during the intervention phase.

Three-step constructive processes. Figure 3.4 shows the questionable presence of a trace of three-step constructive parent-child interaction (i.e., parent demand → child compliance → parent positive attention) during baseline and their robust emergence during intervention. During baseline, the first three steps of the constructive process occurred at a low relative frequency (JNTF = 3). The conditional probability was .60. These results were
statistically significant in the predicted direction (ADJR = 2.23; \( p < .02 \)); however, the statistical significance of these results is questionable because the low relative frequency of the data does not allow the conditions for a normal distribution to be met (Lucyshyn et al., 2011).

In contrast, during the intervention phase, strong and stable three-step constructive processes emerged in the interaction between Aidan and his mother. Aidan’s mother evidenced a dramatic increase in her use of praise after Aidan successfully complied with her routine-related demands (JNTF = 187). The conditional probability of the three-step, constructive process in the intervention phase was .82 and was statistically significant (ADJR = 14.14, \( p < .0000 \)).

**Four-step coercive processes.** Conditional probability data (see Figure 3.3) show that the full four steps of constructive parent-child interaction (i.e., parent demand → child compliance → parent positive attention → child appropriate behaviour) were not statistically significant during the baseline phase but were during the intervention phase. During baseline, Aidan and his mother were never observed to engage in a full, four-step constructive process. The conditional probability of the four-step constructive process in baseline was .00 (ADJR = -.50; \( p < .06 \)).

During intervention, conditional probability data indicate that the four-step constructive pattern of parent-child interaction was statistically significant (CONP = .68; ADJR = 13.90; \( p < .0000 \)). There were numerous occurrences of the constructive process (JNTF = 154) during intervention in comparison to baseline (JNTF = 0).

Overall, sequential analysis data suggest that strong and stable four-step escape-driven coercive processes during baseline transformed into strong and stable four-step
constructive patterns of parent-child interaction in the cup drinking and dinner routines during intervention.

Social Validity Ratings of the Behaviour Support Effort

Aidan’s mother filled out the social validity questionnaire once at the end of the maintenance sub-phase of intervention and once during the follow-up phase. Overall the results indicate that Aidan’s mother perceived the goals, procedures, and outcomes of the family centered PBS intervention to be acceptable and important. The average social validity rating (1 = disagree; 5 = agree) across the two evaluations was 4.75 (range, 4.60 – 4.90). In the comments section of the questionnaire, Aidan’s mother added the following statements: “At the beginning of the plan, I did not believe that Aidan would ever eat. I am amazed Aidan is eating a variety of 10-15 different foods.” “Eating has become an interaction between Aidan and myself and I look forward to our meals.” “It took months of hard work and not enjoying meals, but now I do.” “Eating meals together has become one of the few solid ‘activities’ we do together as a family.”

Goodness-of-Fit Ratings of the Behaviour Support Plan

The “goodness-of-fit” assessment questionnaire was administered once at the end of the maintenance sub-phase of intervention and once during the follow-up phase for both the cup drinking and dinner routines. Overall the results show that Aidan’s mother believed that the behaviour support plan fit well with the ecology of her family. The average contextual fit index (1 = poor fit; 5 = good fit) across the four evaluations was 4.48 (range, 4.31 – 4.59). The average for the cup routine was 4.55 (range, 4.50 – 4.59). The dinner routine average was 4.42 (range, 4.31 – 4.53). Aidan’s mother made the following comments: “[The
interventionist] has been a tremendous support to our family. His strategies always matched our families (sic) needs.”

**Family Functioning Ratings**

Family functioning was measured using two family assessment instruments: (a) the FQOL (Park et al., 2003), and (b) the PSI (Abidin, 1995). The assessment instruments were administered to Aidan’s mother once during the baseline phase, once at the end of the maintenance sub-phase of intervention, and once during the follow-up phase. Overall, the results from the FQOL and the PSI indicate minor improvements in family functioning but do not represent levels of meaningful change for Aidan and his mother in terms of family quality of life and parent stress levels. Results for each assessment instrument are described below.

**Family Quality of Life Survey.** Table 3.1 presents the average satisfaction scores (1 = very dissatisfied; 5 = very satisfied) reported by Aidan’s mother across the five family quality of life domains (i.e., family interaction, parenting, emotional well-being, physical/material well-being, and disability-related support). A score of 3 indicates that the parent is neither satisfied nor dissatisfied. The data show that there was a slight decrease in overall family quality of life from baseline (3.24) to intervention (3.04), and a recovery to baseline levels at follow-up (3.24). This suggests that across the course of the study, Aidan’s mother’s overall level of satisfaction with her family’s quality of life remained constant at a “being neither satisfied nor dissatisfied” level. The greatest positive shift in Aidan’s mother’s perspective was in the domain of family interaction (baseline = 3.33; intervention = 3.17; follow-up = 3.50). Aidan’s mother also indicated a positive shift in her perspective in the domain of disability-related support (baseline = 3.25; intervention = 3.75; follow-up = 3.75).
The largest downward shift in family quality of life was in the physical/material well-being domain (baseline = 4.00; intervention = 3.20; follow-up = 3.40); this was largely due to Aidan’s mother’s decreased satisfaction with Aidan’s access to medical and dental care.

**Table 3.1**

**Family Quality of Life Ratings**

<table>
<thead>
<tr>
<th>Family Quality of Life domain</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family interaction</td>
<td>3.33</td>
<td>3.17</td>
<td>3.50</td>
</tr>
<tr>
<td>Parenting</td>
<td>3.00</td>
<td>2.67</td>
<td>3.00</td>
</tr>
<tr>
<td>Emotional well-being</td>
<td>2.50</td>
<td>2.50</td>
<td>2.50</td>
</tr>
<tr>
<td>Physical/material well-being</td>
<td>4.00</td>
<td>3.20</td>
<td>3.40</td>
</tr>
<tr>
<td>Disability-related support</td>
<td>3.25</td>
<td>3.75</td>
<td>3.75</td>
</tr>
<tr>
<td>Total score</td>
<td>3.24</td>
<td>3.04</td>
<td>3.24</td>
</tr>
</tbody>
</table>

**Parenting Stress Index.** Table 3.2 displays the average child domain, parent domain, and total stress ratings from the PSI (Abidin, 1995) as reported by Aidan’s mother across baseline, intervention, and follow-up. PSI total stress above 299 place parents in the 99th percentile (i.e., clinical range) compared to a normative sample of families raising typically developing children between the ages of 4 and 8 years. Total parenting stress scores between 181 and 257 are considered within the normative range (15th to 85th percentiles; Abidin, 1995). Results from Table 3.2 indicate a minor improvement in average total stress scores across baseline (333; i.e., 99+ percentile), intervention (311; i.e., 99 percentile), and follow-up (315; i.e., 99 percentile). Child domain stress ratings remained in the 99+ percentile across baseline (163), intervention (152), and follow-up (149). Parent domain stress scores showed
slight improvement from baseline (170; i.e., 99 percentile), to intervention (159; i.e., 90 percentile), and follow-up (166; i.e., 90 percentile). Overall, this indicates that Aidan’s mother experienced continually high levels of stress in the clinical range over the course of the study.

Table 3.2

*Parent Stress Ratings*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child domain</td>
<td>163</td>
<td>152</td>
<td>149</td>
</tr>
<tr>
<td>Parent domain</td>
<td>170</td>
<td>159</td>
<td>166</td>
</tr>
<tr>
<td>Total score</td>
<td>333</td>
<td>311</td>
<td>315</td>
</tr>
</tbody>
</table>
CHAPTER FOUR

Discussion

The present study was a replication of the work of Lucyshyn et al. (2011) and Binnendyk (2009). Their research focused on the use of an ecological, family-centered PBS approach to assessment and intervention that was based upon the construct of coercive processes in family routines. The construct of coercive processes in family routines integrates child behaviour, parent-child interaction, and family activity settings into an ecological unit of analysis that generates necessary and sufficient knowledge for the design of survivable interventions that transform coercive parent-child relationships into constructive relationships in the context of valued family routines and promote meaningful changes in the functioning of the family.

The study addressed three primary purposes. The first purpose was to investigate the survivability of an ecological, family-centered PBS intervention with a family of a child with a developmental disability and problem behaviour. Specifically, were effective, acceptable, sustainable, and durable improvements in child behaviour and routine participation promoted through the development and implementation of an intervention based upon the ecological construct of coercive processes in family routines? The second purpose was to examine the interaction between one parent and child within everyday activity settings and how problem behaviour might arise, maintain, and be ameliorated within their interaction. Specifically, the study investigated the presence and transformation of coercive parent-child interaction into constructive parent-child interaction in the context of valued family routines. The third purpose was to determine whether the implementation of the ecological, family-centered PBS intervention was associated with meaningful improvements in family functioning.
Summary of the Results

In regard to the first purpose, results across multiple outcome measures provide evidence of the survivability (i.e., effectiveness, acceptability, sustainability, and durability) of the ecological, family-centered PBS intervention. Results from the quasi-experimental, multiple baseline design across two routines documented two strong basic effects of implementation of the intervention on child behaviour and routine participation. High baseline levels of problem behaviour (average of 87.8% of intervals) evidenced immediate decreases at the point of intervention (average of 11.4% of intervals) across both routines. Improvements in behaviour continued into the maintenance sub-phase of intervention (average of 9.4% of intervals). Follow-up data indicated durable improvements up to 8 months post-intervention with a further reduction in problem behavior to an average of 8.3% across the cup drinking and dinner routines.

A strong basic effect between the implementation of the intervention and routine steps successfully completed across the two routines also was evident from baseline to intervention. Low baseline levels of steps completed (average of 3.4% of steps) evidenced immediate increases at the point of intervention (average of 96.2%) across both routines. Improvements in routine steps completed continued into the maintenance sub-phase of intervention (average of 97.7% of steps completed). Follow-up data indicated durable improvements up to 8 months post-intervention with a further increase in steps successfully completed to an average of 98.2% across the cup drinking and dinner routines.

Social validity results indicated that the goals, procedures, and outcomes of the ecological, family-centered PBS intervention were acceptable and important to Aidan’s mother ($M = 4.75$). Goodness-of-fit results indicated that Aidan’s mother perceived the
behaviour support strategies to be contextually appropriate within the ecology of the family 
\( M = 4.48 \). In addition, Aidan’s mother was also able to sustain her implementation of the 
behaviour support strategies with a high level of fidelity across the intervention and follow-
up phases. This suggests that implementation support procedures (e.g., implementation 
checklist, modeling, coaching) were effective in empowering Aidan’s mother to support 
Aidan’s participation in the cup drinking and dinner routines.

In regard to the second purpose of the study, sequential analysis results provided 
evidence of problematic patterns of interaction between Aidan and his mother prior to 
intervention and improvements in their relationship after the implementation of the 
ecological, family-centered PBS intervention. Sequential analysis results documented the 
presence of a strong and stable escape-driven, four-step coercive process during baseline. 
When Aidan’s mother asked him to participate in either the cup drinking or dinner routine, he 
engaged in high rates of problem behaviour to escape his mother’s requests. In response, 
Aidan’s mother often withdrew her requests for Aidan to come to the table, to drink, to eat, 
etc., and Aidan followed by returning to a calm state. This problematic interaction did not 
continue into intervention; results showed that the four-step escape-driven coercive process 
was not statistically significant across the two target family routines. This change in parent-
child interaction between baseline and intervention provides categorical evidence of the 
disintegration of coercive parent-child interaction in the cup drinking and dinner routines.

In contrast, sequential analysis results showed that the conditional probability of a 
four-step constructive process was not statistically significant during baseline. However, 
during intervention, the conditional probability of a four-step constructive process became 
strong and stable (i.e., statistically significant). When Aidan’s mother asked him to
participate in either the cup drinking or dinner routine, he often complied with his mother’s requests. Aidan’s mother responded to his appropriate behaviour by reinforcing him with positive reinforcement (e.g., praise, preferred item or activity) and Aidan followed by maintaining his appropriate behaviour. This change in parent-child interaction between baseline and intervention provides categorical evidence of the emergence of constructive parent-child interaction in the cup drinking and dinner routines.

Taken together, sequential analysis results offer robust, categorical evidence of the transformation of coercive processes of parent-child interaction into constructive processes of interaction following implementation of the ecological, family-centered PBS intervention with a family of a child with a developmental disability and problem behaviour.

In regard to the third purpose of the study, despite these improvements in child behaviour, routine participation, and parent-child interaction in the cup drinking and dinner routines, Aidan’s mother did not report meaningful improvements in the overall functioning of the family from baseline to intervention and follow-up. This suggests that for Aidan and his mother, the implementation of the intervention was not associated with improvements in family quality of life or parenting stress levels.

Results from the FQOL (Park et al., 2003) indicated that Aidan’s mother’s overall level of satisfaction with her family’s quality of life remained unchanged and neutral throughout the course of the study, at a “being neither satisfied nor dissatisfied” level. Aidan’s mother did report slight improvements in her perspective across the study on the “family interaction” and “disability-related support” domains of the survey. Family interaction domain items that were associated with improvements included: (a) my family enjoys spending time together, (b) my family members support each other to accomplish
goals, and (c) my family members show that they love and care for each other. Disability-related support domain items that were associated with improvements included: (a) my family member with special needs has support to make progress at school or workplace, (b) my family member with special needs has support to make progress at home, and (c) my family member has a good relationship with the service providers who work with our family member with a disability.

Minimal improvements in average total parenting stress scores on the PSI (Abidin, 1995) were documented across baseline, intervention, and follow-up. Aidan’s mother experienced continually high levels of stress over the course of the study (baseline = 333; intervention = 311; follow-up = 315). These scores placed Aidan’s mother in the 99th percentile (i.e., clinical range) in comparison to a normative sample of families raising typically developing children between the ages of 4 and 8 (Abidin, 1995). Results from a recent investigation of the parenting stress levels of 100 mothers with children with autism, aged 3 to 16, showed that the average total parenting stress scores of the mothers on the PSI was 285.3 (Hoffman, Sweeney, Hodge, Lopez-Wagner, and Looney, 2009). This indicates that Aidan’s mother’s total parenting stress scores not only remained at a clinically high level in comparison to a normative sample of families across baseline to follow-up, her scores were also much higher than those reported by a large sample of other mothers of children with autism. Despite Aidan’s mother’s high levels of overall stress, she reported that the dinner routine was the one time of the day that was least stressful for her. The routine was something that she looked forward to each day because it was consistent and manageable, especially in periods of great stress coming from other sources (e.g., work, school, daycare).
Aidan’s mother also reported positive collateral effects that were attributed to the implementation of the ecological, family-centered PBS intervention and the associated improvements in Aidan’s behaviour and her interaction with her son. Collateral effects were reported to me through discussions and correspondence with Aidan’s mother. Aidan successfully accepted all 10 target foods during intervention and further expanded his diet to include 16 new foods by the end of follow-up (e.g., beef, red pepper, watermelon, pistachios, pasta, sweet potato). One of the new items was a children’s chewable vitamin that he ate at the end of every dinner routine. Aidan’s mother also reported that his acceptance of target and new foods generalized to untrained settings and people. He successfully ate snacks and lunches while at his daycare and school with various support personnel. Aidan’s mother also was able to generalize and adapt her implementation of support plan strategies to novel settings. She reported adapting strategies and successfully implementing the dinner routine during: (a) picnics on the beach, (b) meals in a mess hall while at summer camp, and (c) a family visit to Germany. Aidan’s mother also reported that her relationship with her son improved during the cup drinking and dinner routines; Aidan displayed more social interest in his mother and appeared to enjoy their interaction during the two routines. Aidan increased the complexity of his verbal repertoire from one-word idiosyncratic vocalizations (e.g., “Milshy”) to two- and three-word routine-related phrases (e.g., “Walk to table.” “Use a napkin.”). Aidan’s early literacy and math skills also appeared to improve, evidenced by his ability to “read” the symbols of his visual schedule and to actively play various learning-based games on his iPod (e.g., alphabet, word-matching, and counting apps).
Contributions and Findings in Relation to the Literature

The study replicates, contributes to, and extends several findings in the literature: (a) the survivability of an intervention based upon the ecological, family-centered PBS approach; (b) the documentation of coercive and constructive processes in families of children with developmental disabilities; (d) the transformation of coercive family processes into constructive family processes; and (e) a theory about the etiology of problem behaviour in children with developmental disabilities.

The survivability of an ecological, family-centered PBS intervention. The study is a replication of the work of Lucyshyn et al. (2011) and Binnendyk (2009) in which the ecological, family-centered PBS approach informed the development and implementation of an intervention with a family of a child with a developmental disability and problem behaviour. The study contributes to the literature by documenting the ability of the intervention to promote survivable (i.e., effective, acceptable, sustainable, and durable) improvements in child behaviour and routine participation, and in parent-child interaction in family routines.

First, the intervention was effective in that it both reduced the occurrence of child problem behaviour and promoted the development of meaningful adaptive skills (Carr, 2007; Carr et al., 2002; Horner et al., 2002). Second, social validity and goodness-of-fit measures were scored high, indicating that the goals, procedures, and outcomes of the intervention were aligned with the beliefs, values, abilities, resources, and daily routines of the family (Albin et al., 1996; Baer et al., 1987; Callahan et al., 2008; Horner et al., 2000; Lucyshyn, Horner, et al., 2002). Third, the intervention guided the provision of implementation support that matched the skills, needs, and daily life of the family and resulted in a high degree of
sustained treatment fidelity (Albin et al., 1996; Bernheimer & Weisner, 2007; Carr, 2007; Gresham, 1996; Lucyshyn, Kayser, et al., 2002; Moes & Fre a, 2002). Lastly, the study provided preliminary evidence of the durability of the intervention in that child outcomes maintained up to 8 months post-intervention (Binnendyk & Lucyshyn, 2009; Buschbacher et al., 2004; Carr, 2007; Kern et al., 2006; Lucyshyn et al., 2007).

The results of the study also strengthen the external validity of designing interventions based upon the ecological, family-centered PBS approach (Binnendyk, 2009; Binnendyk & Lucyshyn, 2009; Lucyshyn et al., 2011). This is the first study in the developmental disability literature that documents the effectiveness, acceptability, sustainability, and durability of an intervention based upon the approach with a mother and child of German-descent in the context of a single-parent family. The study contributes to the literature that has shown that the approach can be used to successfully develop and implement interventions with families of diverse cultural and linguistic backgrounds (Binnendyk & Lucyshyn, 2009; Lucyshyn et al., 2011). The study also extends the generalizability of ecological, family-centered PBS by showing that intervention developed from the approach can lead to survivable outcomes with families of varying composition (i.e., a single-parent family).

**Documentation of coercive and constructive processes in families of children with developmental disabilities.** Patterson and colleagues (Patterson, 1982; Patterson et al., 1992; Reid et al., 2002) have long-established the presence of coercive processes in parent-child interaction in their research with antisocial boys and their families. Lucyshyn and colleagues (Binnendyk, 2009; Lucyshyn et al. 2004, 2009, 2011) extended Patterson’s coercion theory by documenting coercive processes, as well as the emergence of constructive
processes, with families of children with developmental disabilities and problem behaviour. The current study adds to this growing body of research by empirically documenting the existence of coercive parent-child interaction in the valued but problematic routines of a single-parent family of a child with autism. During baseline, results indicated a strong and stable four-step escape-driven coercive interaction (i.e., parent demand → child problem behaviour → parent withdraws demand → child terminates problem behaviour) operating between Aidan and his mother in the cup drinking and dinner routines. Aidan often engaged in problem behaviour in response to his mother’s requests related to the two target routines. These problem behaviours were severe enough that Aidan’s mother typically withdrew her requests for Aidan to participate in the routines; the removal of these requests negatively reinforced Aidan’s problem behaviour. The coercive process continued when Aidan responded to his mother’s submission by terminating his problem behaviour, thus negatively reinforcing his mother’s acquiescence to his behaviour within the routine.

Lucyshyn and colleagues (2011; Binnendyk, 2009) documented the first empirical evidence of the emergence of constructive processes of parent-child interaction following intervention in natural family routines. The current study contributes to the literature by empirically documenting the emergence of constructive parent-child interaction in the valued routines of a single-parent family of a child with autism in which parent requests and demands were common. Following intervention, results indicated a strong and stable four-step constructive interaction (i.e., parent demand → child compliance → parent positive attention → child appropriate behaviour) operating between Aidan and his mother in the cup drinking and dinner routines. Aidan often complied with his mother in response to her routine-related requests. Aidan’s mother consistently responded to Aidan’s compliance with
positive reinforcement in the form of praise, affection, and/or access to preferred items or activities. Aidan reciprocated with various forms of acceptable behaviour (e.g., continued drinking or eating, engagement with the reinforcer, social interaction with his mother), thus reinforcing his mother’s positive attention to his behaviour within the routine.

Transformation of coercive family processes into constructive family processes. Lucyshyn and colleagues (2011) provided the first empirical demonstration of the transformation of four-step coercive processes of parent-child interaction into four-step constructive processes of interaction in natural family routines in the home and community. Binnendyk (2009) contributed categorical evidence of the transformation of coercive processes into constructive processes by documenting change in these patterns of interaction following implementation of a behavioural feeding intervention with a child with autism who engaged in severe food refusal behaviour. The current study contributes to the literature another categorical demonstration of change in the relationship between a parent and child with a developmental disability. Sequential analysis results provide compelling preliminary evidence of the transformation of coercive parent-child interaction into constructive parent-child interaction following intervention in the two target routines.

Strong and stable coercive processes were documented during baseline but not during intervention. A two-step coercive process (i.e., parent demand → child problem behaviour) occurred 252 times during baseline but only once at intervention. A three-step coercive process (i.e., parent demand → child problem behaviour → parent withdraws demand) occurred 157 times during baseline but never at intervention. The full four-step coercive process (i.e., parent demand → child problem behaviour → parent withdraws demand →
child terminates problem behaviour) occurred 108 times during baseline but did not occur during intervention.

Strong and stable constructive processes that did not exist or were suspect during baseline emerged as statistically significant positive interactions between Aidan and his mother during intervention. A two-step constructive process (i.e., parent demand → child compliance) occurred only five times during baseline but greatly increased in frequency to 228 times during intervention. A three-step constructive process (i.e., parent demand → child compliance → parent positive attention) occurred only three times during baseline but increased to 187 times during intervention. The full four-step constructive process (i.e., parent demand → child compliance → parent positive attention → child appropriate behaviour) did not occur during baseline but occurred 154 times during intervention.

The clear disintegration of coercive processes and the dramatic emergence of constructive processes in the intervention phase suggest that the implementation of the ecological, family-centered PBS intervention was effective in improving the patterns of interaction between Aidan and his mother during the cup drinking and dinner routines. These results must be interpreted with caution in lieu of a complete statistical analysis of change in coercive processes and constructive processes from baseline to intervention. However, the differences documented are so dramatic that statistical analysis may not be entirely necessary (R. Bakeman, personal communication, March 6, 2012).

**The etiology of problem behaviour in children with developmental disabilities.** Lucyshyn et al. (2011), based on the results of their investigation of the transformation of coercive processes with 10 families of children with developmental disabilities and problem behaviour, as well as previous observational and intervention research with families,
proposed a theory of the etiology of problem behaviour in family routines among families raising a child with a developmental disability. This study partly corroborates and further extends this theory by offering evidence of the role that escape-driven coercive processes played in the development and maintenance of problem behaviour in two family routines with a single parent of a young child with autism. The theory, which I will illustrate with examples from interactions between Aidan and his mother during baseline, consists of four parts: (a) child characteristics that set the stage for problem behaviour, (b) parental expectations for child behaviour and participation in family life, (c) coercive processes develop when normative expectations are introduced, and (d) effects of persistent and pervasive coercive processes on the child and family.

**Child characteristics that set the stage for problem behaviour.** Children with developmental disabilities may exhibit a wide array of challenges in various areas of functioning; for example, impairments in communication (Matson, Boisjoli, & Mahan, 2009), social skills deficits (Bellni, 2004), physical challenges (Vanvuchelen, Roeyers, & De Weert, 2007), sensory issues (Smith Myles, et al., 2004), learning problems (Dickerson Mayes & Calhoun, 2007; Sturm, Fernell, & Gillberg, 2004), and anxieties (Gillot, Furniss, & Walter, 2001). These challenges may make common stimuli in the environment, simple activities, and normative expectations difficult or aversive to these children. For example, it appeared that Aidan did not like the texture of soft or mushy foods in his mouth.

Very early on, these children learn forms of behaviour that allow them to get their needs met and that mitigate the individual challenges that they experience. These behaviours become functional for these children and often develop into fixed repertoires or routines that provide them with a sense of comfort and predictability (Gillot, Furniss, & Walter, 2001;
Turner, 1999). Some of these children exhibit extreme rigidity in their repertoires and routines, developing an insistence on sameness that sets the stage for problem behaviour (Kanner, 1943; Prior & Macmillan, 1973; Szatmari, et al., 2006). For example, Aidan had an extremely limited array of food that he was comfortable with eating. The main element to his diet was toast with syrup, cut up in a particular manner, and served on a particular serving board. This was given to Aidan at every meal for approximately 2 years.

**Parental expectations for child behaviour and participation in family life.** Parents naturally want to introduce their children to new experiences and want to teach them the skills and expectations needed to be successful in life. This teaching often occurs within the activity settings of common family routines. Examples of common family routines include waking up and getting ready for the day, eating meals with the family, participating in learning and play activities independently and with others, experiencing activities in the community, or getting ready for bed and sleeping independently. Parents also attempt to disrupt the existing fixed repertoires of behaviour and routines of their children that may appear unconventional or problematic by presenting their children with more appropriate ways in which to participate in these experiences. For example, Aidan’s mother wanted Aidan to eat a wider, more nutritious diet and attempted to introduce new foods to him on numerous occasions during the years that he was only accepting toast with syrup.

**Coercive processes develop when normative expectations are introduced.** In contexts in which parents attempt to present their children with new experiences, normative expectations, and/or changes to their fixed repertoires or routines, these children often engage in problem behaviour. These children engage in problem behaviour to functionally re-establish the “sameness” that provides them with the comfort and predictability in which they
are accustomed. These children stipulate that conditions remain the same or go back to what they were prior to interacting with their parents. In routines in which parent requests are common, these children often engage in escape-motivated problem behaviour. For example, when Aidan’s mother presented Aidan with new foods at dinner, he typically responded by pushing the food away. If Aidan’s mother persisted in her attempts, Aidan often escalated by screaming, crying, and dumping his plate on the table or floor.

When parents experience problem behaviour from their children, particularly if it escalates to intense levels, they naturally engage in actions that terminate the problem behaviour. In routines in which parent requests are common, these parents often withdraw their requests or they reduce their demands by offering the children assistance in a manner that no longer provokes problem behaviour. These children, in turn, tend to respond to their parents’ acquiescence by terminating or reducing their problem behaviour. This result reinforces the future use of problem behaviour by the children because they ultimately get what they want (i.e., to escape from the parent request). The parents effectively put a stop to the problem behaviour, which negatively reinforces their ineffective parenting practices (e.g., submitting to the problem behavior of their children). For example, when Aidan’s mother attempted to get Aidan to eat a new food and he responded by screaming and dumping his plate, Aidan’s mother often withdrew her requests, stopped making attempts to get him to eat new foods, and reverted to making Aidan toast with syrup. Aidan typically calmed down once he was back to eating toast. As noted above, Aidan ate the same toast with syrup at every meal for approximately 2 years and his mother rarely attempted to get him to try any other new foods.
These coercive processes happen very quickly and frequently; oftentimes, those involved are not even cognizant that this problematic pattern of interaction is occurring. It must be noted that blame should not be attributed to either the children or parents. The children simply try to keep their world comfortable and predictable by engaging in behaviours and routines that have worked for them in the past. Parents present experiences, expectations, and changes that they believe will benefit their children but they tend to withdraw these attempts in the face of problem behaviour. This submission is done out of caring and compassion because they want to see their loved ones happy or content, not upset or in distress (Lucyshyn et al., 2011).

**The effects of persistent and pervasive coercive processes on child and family.**

Coercive patterns of parent-child interaction affect both the child and the family as a whole when they repeatedly occur across routines in the home and community. The coercive process acts as a barrier between the child and new experiences (R. Horner, personal communication, Dec 15, 2011). When a coercive process occurs, it reinforces the child’s insistence on sameness and contributes to the building of a wall between the child and new learning. When a parent attempts to guide their child to do something outside of the child’s wall (e.g., new experiences, normative expectations, changes to routines), they are usually met with some form of problem behaviour. Consequently, the parent typically withdraws their attempt. The child’s problem behaviour ultimately serves to maintain or re-establish the comfort and predictability experienced by the child within the walls of their fixed repertoires and routines. Over time, the coercive process happens across enough family routines in the home and community that parents no longer present new experiences to their child. The child indirectly teaches those around him to not challenge him with new learning and to stick with
the fixed routines that are acceptable to the child (i.e., generalized stipulation; R. Horner, personal communication, Dec 15, 2011). Generalized stipulation may partially explain how the children themselves contribute to their own restricted participation in educational, social, and community opportunities (Carr, 2007; Horner et al., 2002; Lucyshyn, Horner, et al., 2002).

Coercive parent-child interaction also negatively affects the architecture of family life when the coercive process occurs across a number of valued and important activity settings. Parents make multiple accommodations in their daily lives when coercive processes repeatedly occur and generalize across routines in the home and community. These accommodations result in family activity patterns that are less than ideal but are tolerable to the family (Fox et al., 2002; Woods & Goldstein, 2003). Lucyshyn et al. (2011) described three types of family activity patterns that emerge as a result of generalized coercive parent-child interaction: (a) absent routines, (b) distorted routines, and (c) typical but problematic routines.

Absent routines are common family routines that parents completely remove from their life in the home or community with their child with a disability. These routines are absent because the effort required to deal with child problem behaviour within the routines far outweighs the value of initiating and participating in the routine. For example, Aidan’s family never dined out at restaurants due to Aidan’s limited array of preferred foods and the problematic food refusal behaviour that he would engage in when presented with new foods.

Distorted routines are common family routines that are altered in ways that are tolerable but not valued by parents. They only do so to eliminate or minimize problem behaviour. For example, Aidan slept in the same bed as his mother on a nightly basis because he would cry
and leave his bed when his mother attempted to put him to sleep in his own room. Typical but problematic routines are common family routines that occur on a regular basis and are normative in terms of organization and expectations, but every time the routine takes place, coercive parent-child interaction occurs. For example, Aidan enjoyed watching videos when he arrived home from school. If Aidan’s mother did not turn on the television when Aidan wanted, he would often scream or throw objects in the living room until mother played the video.

**Summary.** Many children with developmental disabilities develop fixed repertoires of behaviour and routines. These rigidities develop because these behaviours and routines have reliably worked for the children in getting their needs met and in diminishing the various challenges that they might encounter due to their diagnosis. Parents naturally want to introduce their children to new learning and experiences but are often met with problem behaviour. Parents tend to submit to their children when faced with this problem behaviour; behind this acquiescence is love because parents do not want to see their children suffering. When this capitulation occurs, these children typically terminate or reduce their problem behaviour. This coercive process of parent-child interaction reinforces both child problem behaviour and ineffective parenting practices. When coercive processes occur across multiple family routines and across family members, these children are rarely or no longer presented with new experiences. The coercive process essentially encapsulates these children by reinforcing their fixed repertoires of behaviour and routines, which blocks them, and their family, from participating in new experiences.
Implications for Assessment and Intervention

The results of this study offer three broad implications for behavioural assessment and intervention with families of children with developmental disabilities and problem behaviour. These include: (a) assessing coercive processes of parent-child interaction; (b) assessing and intervening within family activity settings; and (c) assessing family ecology and providing adjunctive, family-centered supports.

Assessing coercive processes of parent-child interaction. Assessment procedures guided by the ecological, family-centered PBS approach should include both functional assessment procedures and an assessment of coercive processes that may be operating between the child with a developmental disability and his or her parent. Functional assessment procedures allow us to understand the behavioural mechanisms that maintain child problem behaviour (e.g., negative reinforcement, positive reinforcement). Functional assessment procedures identify the first three steps of a coercive process: (a) parent aversive behaviour (e.g., a request to eat a new food), (b) child problem behaviour (e.g., crying, physical resistance, dumping food), and (c) the withdrawal of parent aversive behaviour (e.g., removing new foods from the child’s plate).

The assessment of coercive patterns of parent-child interaction involves identifying the fourth step to the coercive process: the child terminating their problem behaviour after the withdrawal of parent aversive behaviour. Adding one additional question to the functional assessment process (i.e., “What does the child do after the parent withdraws their aversive behaviour?”) allows us to understand the behavioural mechanism that gives rise to ineffective parenting practices. When the child terminates his or her problem behaviour, it negatively reinforces parent submission.
Without an assessment of the effects of child behaviour on the parent, the survivability of a PBS plan may be compromised. Parent implementation fidelity and the long-term use of intervention procedures are not likely to occur if the parent’s history of negative reinforcement for submission to the child are not disrupted and amended. The assessment of coercive processes results in the following implications for intervention: (a) informing parents of coercive processes operating in family routines, (b) beginning intervention with the interventionist, (c) developing a strong collaborative partnership with family members, and (d) parents self-monitoring the re-occurrence of coercive processes.

**Informing parents of the coercive processes operating in family routines.** During the assessment process, parents should be introduced to the concept of coercive processes and how they operate within problematic family routines. The interventionist should start a dialogue with parents explaining of how problematic interactions that occur between children and parents within a routine reciprocally reinforce child problem behaviour and ineffective parenting practices. This is an important initial step in helping parents dismantle coercive patterns of parent-child interaction (Reid, Patterson, & Snyder, 2002). This dialogue must be conducted without judgment and must include empathy and respect for the family. In this study, I sat down with Aidan’s mother and reviewed the four steps of the coercive process. I emphasized that blame cannot be attributed to either Aidan or his mother in the development of the coercive process operating in the family’s cup drinking and dinner routines; Aidan engaged in problem behaviour because he wanted to maintain the familiarity of the routines and Aidan’s mother yielded to her son’s problem behaviours out of love because she did not want to see her son upset.
**Beginning intervention with the interventionist.** In some family routines, the coercive process may be so deeply embedded that the parent may not be psychologically or emotionally prepared to implement a multicomponent PBS plan to promote initial change in child behaviour and parent-child interaction. Dumas (2005) has noted that parents and their children may have such a long history of coercive exchanges that they become automatic and highly resistant to change. In this circumstance, beginning implementation of the intervention by having the interventionist promote initial change in a target routine may improve the efficiency and effectiveness of the support effort (Binnendyk & Lucyshyn, 2009). Doing so also may reduce the stress experienced by parents who have been caught up in coercive exchanges with their child for months or years. The interventionist does not have the history of problematic interaction that is shared between the parent and the child in family routines. Thus, promoting the initial change in child behaviour is comparatively easier for the interventionist. Stimulus control in the target routine is first established with the interventionist and then transferred to the parents when stable behaviour change has been evidenced.

In this study, I initially worked with Aidan in the first family routine (i.e., cup drinking) because his mother was experiencing a high level of stress at the onset of the study. Having her initiate the implementation of the behaviour support strategies in the cup drinking routine would have only compounded her stress levels. I also initiated working with Aidan in the dinner routine. Despite Aidan’s mother’s success in implementing the cup routine strategies at that point in time, she was not prepared to promote change within the dinner routine. Aidan and his mother had a long history of coercive patterns operating within the dinner routine and it was prudent that I gain stimulus control over Aidan’s eating within the
routine. I worked with Aidan in both routines to establish stimulus control over his drinking and eating (i.e., three consecutive sessions of near-zero levels of problem behaviour and a minimum of 85% of the routine steps successfully completed; five new foods introduced in the dinner routine) before transferring the routine to his mother.

**Developing a collaborative relationship between parents and the interventionist.**

Establishing a strong and trusting collaborative partnership between the family and the interventionist is critical in supporting parents in their attempt to transform patterns of coercive interaction into patterns of constructive interaction with their children (Lucyshyn, Horner, et al., 2002). The interventionist often needs to provide emotional support when the family needs to marshal the faith, courage, and energy needed to promote change within the routine. The interventionist also serves as a coach when the family needs guidance in dismantling the coercive process and developing the constructive process within the routine.

In this study, Aidan’s mother and I were able to form a relationship in which we both felt comfortable in speaking openly with one another. I was able to provide her with both instrumental and emotional support during our conversations. Sometimes, my role was to provide her with the technical support she needed to accurately implement PBS plan strategies. At other times, my role was to simply be an empathetic ear when she needed to regain her perspective and composure after challenging events.

**Parent self-monitoring the re-occurrence of coercive processes.** When success has been achieved with the family routine, it is important to teach parents to become self-sufficient in their use of the support strategies and to prevent a relapse toward the coercive process. One promising way to do this is for parents to use a simple, one-page coercive process assessment tool to self-monitor and self-evaluate the reoccurrence of coercive
processes in the routine. In this study, Aidan’s mother used such a tool to self-monitor and self-evaluate the re-occurrence of the coercive process in the cup drinking and dinner routines. When she recognized that coercive processes had re-asserted themselves in these routines, this prompted us to meet, review strategies that were being implemented, and collaboratively generate ways to disrupt the re-emerged coercive processes and re-gain the occurrence of constructive processes.

Assessing and intervening within family activity settings. Lucyshyn and colleagues, as well as other researchers (Binnendyk & Lucyshyn, 2009; Buschbacher et al., 2004; Lucyshyn & Albin, 1993; Lucyshyn et al., 1997; Lucyshyn et al., 2007; Moes & Frea, 2000) have long asserted the value of the family activity setting as a unit of analysis for understanding the ecological and cultural factors that contribute to the development and maintenance of problem behaviour, and for building technically sound and contextually appropriate behaviour support plans in natural family contexts that are likely to be effective, acceptable, sustainable, and durable. This study further confirms the value of the family activity setting as a unit of analysis and underscores four distinct benefits to interventionists working with families. The activity setting of daily and weekly family routines: (a) facilitates the selection of intervention goals that match family goals and values for the child and family, (b) contributes to the design of contextually or culturally appropriate behaviour support plans, (c) provides a practical context for ameliorating coercive processes with the complexity of family life; and (d) offers a pathway toward comprehensive improvements in child behaviour and family quality of life through the strategic selection and sequencing of family routines when planning for change. These benefits are discussed below.
Selecting intervention goals that match family goals and values. The family activity setting facilitates the selection of intervention goals that match the family’s goals and values for the child and family. When the interventionist asks parents to describe a meaningful vision of a successful activity setting, the family’s response reflects the elements of family activity settings (e.g., time and place, people, resources, tasks, goals and values, scripts of interaction) that are most important to the parents, elements that are usually not present in the current incarnation of the routine. During this discussion, the interventionist encourages the family to build a vision that is realistic and practical given the current ecology of the family. Doing so can generate a sense of hope and optimism in the family that their situation will change for the better and that they will be able to play an important role in achieving their vision. In this study, for example, when Aidan’s mother described her envisioned dinner routine, she said that she wanted her son to eat a variety of vegetables. As this was the first time that she ever considered the possibility, I observed her eyes light up with a mixture of surprise and hope as she contemplated a possibility that until that time she had viewed only as impossible. She playfully communicated this tension between the immutable past and the malleable present by stating that although she found it hard to believe, she was willing to see where the behaviour support process would lead in regard to her son eating her initial envisioned list of foods.

Designing contextually and culturally appropriate behaviour support plans. When an interventionist works with a family to collaboratively define the elements of an envisioned family routine, they begin a process that can lead to a contextually or culturally appropriate behaviour support plan (Albin et al., 1996; Lucyshyn, Kayser, et al., 2002). By following the family’s lead in regard to defining the time and place that the routine will occur, the people
that will participate in the routine, the tasks and expectations for the child and other participants, the resources that will be used during the routine, the goals that will be achieved for the child and family, and the values that will be expressed, the interventionist and family together begin to naturally construct a family routine that is a good contextual or cultural fit with the family’s ecology. In this study, it was very important to Aidan’s mother that her son received the proper nutrition that he required for healthy growth. It was also important to her that Aidan begin to participate in activities that were more developmentally appropriate for his age (e.g., drinking from a cup versus from a bottle). The cup drinking and dinner routines were targeted because successful participation in both routines would reflect the goals and values that were important to Aidan’s mother. I encouraged Aidan’s mother to think of these goals and values when she described the other activity setting elements during our conversation. For example, the selection of target foods in the dinner routine was important to Aidan’s mother because she ate a very healthy diet and she wanted Aidan and herself to eat the same foods.

**Providing a practical context for ameliorating coercive processes.** Family activity settings provide the interventionist with a well-defined, practical context in which to embed intervention aimed at amending coercive family processes (Lucyshyn et al., 2011). For many, if not most, parents, attempting to implement behaviour support strategies across the entire day aimed at ameliorating coercive processes would be unrealistic given the effort required paired with the demands of their other roles and responsibilities. Focusing intervention on one or two family activity settings at a time increases the feasibility of the parent’s ability to implement the change process. In this study, Aidan engaged in problem behaviour across a number of family routines throughout the day (e.g., eating with his mother, using the toilet,
Many of these routines warranted intervention; however, Aidan’s mother and I collaboratively selected the cup drinking and dinner routines based upon several considerations: (a) Aidan’s mother viewed these routines as vital to her son’s health and overall physical and mental development; and (b) the time of day that these routines were envisioned to occur was convenient and comfortable for the mother in regard to working with an interventionist in her home.

**Strategically selecting routines when planning for change.** Once family activity settings are identified and defined, it is necessary for the interventionist and family to strategically select the sequence in which implementation of the intervention will occur. Lucyshyn and colleagues (2009, 2011) assert that prioritizing family activity settings for intervention defines a *critical path* towards meaningful change in family life. Parents may be apprehensive or may be enthusiastic about their participation in the behaviour change process. Parents that perceive the process of change as arduous might choose to take the *path of least resistance* (Lucyshyn et al., 2011). This path involves targeting family routines in which change is perceived to be easier and then moving towards those routines in which change is perceived to be more difficult. Parents that are enthusiastic about their participation in the behaviour change process might select a path that targets routines that are perceived to be more difficult but once successful, promote generalized changes in child behaviour across other settings and routines (i.e., *pivotal routines*; Binnendyk & Lucyshyn, 2009; Lucyshyn et al., 2009, 2011). In this study, Aidan’s mother wanted to begin with the cup drinking routine because she perceived it as being easier than the dinner routine. Taking this path allowed her to master the behaviour support strategies in the PBS plan for the cup drinking routine before taking on the more challenging dinner routine. Aidan’s mother’s success in teaching her
son to drink from a cup allowed her to approach intervening in the dinner routine with both self-confidence and skill. Both played an important role in her abiding effort and eventual success in achieving her vision of a successful dinner routine.

**Assessing family ecology and providing adjunctive, family-centered supports.**

When interventionist engage in an open dialogue with parents about relevant features of the broader ecology of family life, doing so also may contribute to the development of survivable interventions. These features include child and family strengths, family resources and social supports, family stressors, and goals for the child and the family (Lucyshyn, Kayser, et al., 2002). This open discussion of family life, engaged in a conversational manner, can contribute to the development of a trusting and collaborative relationship between parents and the interventionist (Lucyshyn & Albin, 1993). Information gathered during this discussion may also enhance the design of a contextually appropriate behaviour support plan. Such a plan builds upon the strengths of the family, utilizes the resources and social supports available to the family, and addresses the goals that are most important to the family.

The interventionist and parents discussing family stressors (e.g., parent health or psychological problems, marital conflict, employment-related stressors) also can strengthen the contextual appropriateness of a support plan. Information from this discussion can guide the interventionist’s identification of adjunctive supports that may be necessary to ensure successful parent implementation of behaviour support strategies and improvements in family quality of life. In this study, Aidan’s mother informed me that she experienced high levels of stress that often resulted in her feeling overwhelmed when taking care of her son. Given this, Dr. Lucyshyn offered mindfulness training and support to Aidan’s mother to provide her with a method to promote her personal well-being. Aidan’s mother gave her
informed assent to this adjunctive treatment and subsequently participated in one two-hour training session with Dr. Lucyshyn. Mindfulness training included a sitting meditation and walking meditation. Both forms of meditation included specific strategies that Aidan’s mother could use to clear her mind of what was causing her stress in the moment so that she could approach her daily responsibilities from a calm and more “present” state of mind.

**Cautions**

Two cautions must be taken when interpreting the results associated with improvements in Aidan’s behaviour and his interaction with his mother in the cup drinking and dinner routines: (a) modest family functioning outcomes, and (b) efficiency of the assessment and intervention process. These cautions are discussed below.

**Modest family functioning outcomes.** Aidan’s mother’s FQOL (Park et al., 2003) and PSI (Abidin, 1995) scores indicated that the overall functioning of the family did not improve over the course of the study. These findings were similar to the results of Binnendyk (2009) in which family quality of life and parenting stress showed little to no improvement for three families working on meal routines across 8 months of intervention. There are two potential reasons for these results.

First, the selection of the target routines for intervention was too narrow to address all of Aidan’s problem behaviour across his entire day. The cup drinking and dinner routines were very similar in that: (a) the same functions of problem behaviour were operating in both routines, (b) the expectations of both routines were comparable, and (c) the support strategies developed to address Aidan’s problem behaviour were essentially the same across both routines. The two routines were so similar that Aidan’s mother eventually integrated the cup drinking routine into the dinner routine in her day-to-day implementation. Information
gathered during the assessment process identified that Aidan engaged in problem behaviour in a number of other family routines (e.g., going to bed, playing independently). The non-targeted routines in which problem behaviour was still present were a source of continued stress for Aidan’s mother and possibly affected her family functioning scores. The selection of the cup drinking and dinner routines for intervention was not adequate in teaching Aidan’s mother the all of the needed strategies to address the different functions of problem behaviour and the different expectations within these other routines. Results from the family functioning measures suggest that intervening across two routines similar in terms of the functions of problem behaviour, routine expectations, and support strategies was not sufficient to addressing all of the problem behaviours that Aidan engaged in throughout his day.

Intervention targeted to support a wider range of family routines has been offered to Aidan’s family with the goals of: (a) reducing Aidan’s mother’s stress related to her son’s problem behaviour, and (b) to teach her an array of strategies to address other valued routines with different functions of problem behaviour and expectations than the cup drinking and dinner routines. The bedtime routine was identified as the first activity setting to be addressed outside of the research context. Intervention in this routine has not yet occurred.

The second potential reason for the modest family functioning outcomes was that the adjunctive supports that were in place were not sufficient to address all of the problematic issues in the larger ecology of the family. Aidan’s mother was a single parent with a large number of responsibilities (e.g., child care, finances, personal and family health). She experienced high levels of stress when faced with these responsibilities and had very little support from others. Given this, the persistent stressors inherent in her life circumstances
likely contributed to the absence of improvement in her scores on the family functioning measures.

Mindfulness training was offered to Aidan’s mother as the primary adjunctive strategy to help her cope with her stress. Aidan’s mother participated in one mindfulness training session with Dr. Lucyshyn and was given reading materials to help her continue with this strategy on her own. She was encouraged to take 5 – 15 minutes prior to each parent training session during the intervention phase to practice her mindfulness strategies. Overall however, the level of mindfulness training and support offered to Aidan’s mother was low. Follow-up mindfulness training support from Dr. Lucyshyn was offered to Aidan’s mother on two occasions. Aidan’s mother expressed interest in this additional support but was hesitant to accept out of concern for Dr. Lucyshyn’s time. In retrospect, I believe it would have been better had I placed a stronger emphasis on the implementation of this adjunctive support strategy by following through with arranging a time for this additional support to be provided. A stronger focus on this adjunctive support strategy might have led to improved implementation of mindfulness techniques and a consequent reduction in Aidan’s mother’s stress.

Efficiency of the assessment and intervention process. The intervention based upon the ecological, family-centered PBS approach was successful in improving Aidan’s behaviour, routine participation, and parent-child interaction within the cup drinking and dinner routines. The assessment and intervention process however, could not be viewed as efficient. The intervention phase of the study, consisting of the initial interventionist training (IIT), initial parent training (IPT), and maintenance support sub-phases, was spread over the course of 12 months. Across both target routines, the outcomes summarized required
approximately 27 hours of IIT across 38 sessions (13 cup drinking and 25 dinner), 29.5 hours of IPT across 48 sessions (25 cup drinking and 23 dinner), and 9 hours of maintenance support across 16 sessions (10 cup drinking and 6 dinner). The substantial amount of time required may be attributed to one methodological and two clinical factors.

First, rather than develop a comprehensive PBS plan that more immediately gave Aidan’s mother the opportunity to implement PBS strategies across the entire day (see Lucyshyn et al., 1997, 2007), we modified the family-centered PBS approach by designing routine-specific PBS plans. This was done to control for drift or generalization across baselines in the multiple baseline research design across settings and to minimize error variance when comparing interactional processes operating in baseline and intervention conditions.

Second, the tenacity of the coercive processes operating in the target routines affected the efficiency of the study. Aidan had a long history of food-related escape behaviour with his mother. In order to diffuse this history, it was necessary for me to initiate intervention with Aidan to establish stimulus control in both routines. Establishing stimulus control in the cup routine was not a challenge compared to gaining control within the dinner routine. Aidan was extremely resistant to trying new foods and was very efficient in avoiding requests to eat. Sixteen sessions were required find a strong enough reinforcer to motivate Aidan to take his first bite of the target food that was being offered. Nine additional sessions were required to gain stimulus control in the dinner routine and to introduce four additional target foods to Aidan before transferring stimulus control of Aidan’s behaviour in the routine to Aidan’s mother. In all, the IIT phase for the dinner routine occurred across approximately 3 months (including a break over the Christmas holiday). Additional time requirements for the
treatment of severe food refusal behaviour have been noted by family interventionists; de Moor, Didden, and Korzilius (2007) described a treatment protocol that required between 50 and 70 sessions across 4 to 8 months to ameliorate severe food refusal behaviour in young children with developmental disabilities.

Third, despite Aidan’s success in completing the expected steps of the cup drinking and dinner routines during the IPT and maintenance sub-phases of intervention, problem behavior intermittently re-emerged to unacceptable levels (i.e., 10% or higher of intervals of problem behaviour) in both routines. Aidan began to stuff his mouth with food and banged on the table while waiting in between sips and bites. A brief functional assessment of this problem revealed a shift in the function of Aidan’s problem behaviour; he no longer was trying to escape drinking or eating, he was stuffing his mouth and banging on the table to obtain his activity reinforcer as quickly as he could (i.e., a tangible function). These spikes in problem behaviour affected the stability of the data, resulting in the need to conduct additional training sessions and collect additional observations until stable and acceptable levels of behaviour were again evidenced.

Limitations

Four limitations in the design and analysis of the study warrant acknowledgement: (a) documentation of experimental control, (b) comparative analysis of coercive and constructive processes, (c) limited external validity, and (d) moderate follow-up data. These limitations are discussed below.

Documentation of experimental control. The multiple baseline design utilized in this study was quasi-experimental, consisting of only two baselines (i.e., cup drinking and dinner). This design does not control all threats to internal validity (e.g., history, maturation).
Documenting the existence of a functional relation between an independent variable and one or more dependent variables requires three demonstrations of a basic effect at the point of intervention at three different points in time (i.e., across three different baselines; Horner et al., 2005). A basic effect is demonstrated when substantial change in the direction of treatment is documented at the point of intervention in one baseline. Therefore, the quasi-experimental research design employed in this study did not document a functional relation between the implementation of the ecological, family-centered PBS intervention and improvements in child behaviour and participation in the two target routines. Rather, it demonstrated two basic effects.

However, a scientifically valid inference about the effect of the intervention on Aidan’s behaviour and routine participation could be made based upon the characteristics of the study (see Kazdin, 1982). Objective data were continuously assessed, data did not overlap across routines, the levels of performance remained stable before and after intervention, and there was a marked improvement in Aidan’s behaviour and routine participation at the point of intervention for both routines. Taken together, these characteristics of the study help to rule out threats to internal validity in a manner similar to a true experiment (Binnendyk & Lucyszyn, 2009; Kazdin, 1992). These characteristics of the study allow the results to be interpreted as documenting a strong and compelling association between the implementation of the ecological, family-centered PBS intervention and improvements in child behaviour and routine participation.

**Comparative analysis of coercive and constructive processes.** Sequential analysis results provide preliminary categorical evidence of the transformation of coercive parent-child interaction into constructive parent-child interaction after the implementation of the
ecological, family-centered PBS intervention. Strong and stable coercive processes were present in baseline but not intervention; constructive processes did not exist or were suspect during baseline and emerged as strong and stable parent-child interaction during intervention. These results however should be interpreted with caution. A more rigorous statistical analysis of change in coercive processes and constructive processes from baseline to intervention is required before one can verify unequivocally that implementation of the intervention was effective in improving parent-child interaction.

**Limited external validity.** A central concern to external validity is “the extent to which an effect documented by one study has relevance for participants, locations, materials, and behaviours beyond those defined in the study” (Horner et al., 2005, p. 171). The participation of only one child and his mother and the selection of two similar family routines in terms of the function of problem behaviour, routine expectations, and behaviour support strategies limits the external validity of this study and our ability to draw conclusions about the potential impact of the ecological, family-centered PBS approach to assessment and intervention across other types of families and valued routines.

**Moderate follow-up data.** Follow-up data were collected at 1-, 5-, and 8-months post-intervention. Follow-up data indicated that Aidan’s problem behaviour remained at acceptably low levels and that he sustained his high levels of successful participation in the two target routines. These data offer only moderate evidence of the durability of child outcomes, it has been argued that a more convincing case for the durability of an intervention is maintenance of outcomes for one year or more post-intervention (Carr, 2007; Kern et al., 2006; Lucyshyn et al., 2007). However, collecting follow-up data for up to one year post-intervention was beyond the scope of this study.
Another limitation related to the follow-up data is the absence of an analysis of coercive processes and constructive processes during this phase. The sequential analysis of parent-child interaction during the follow-up phase would allow for an evaluation of the durability of constructive processes in the cup drinking and dinner routines up to 8 months post-intervention. Such an analysis was not feasible due to the need for at least 100 minutes of parent-child interaction data across both routines, as well as the time constraints of completing my requirements for my Master’s program. However, the maintenance of improvements in child behaviour and routine participation during the follow-up phase suggests that constructive parent-child interaction maintained across the cup drinking and dinner routines.

**Future Research**

Future research should consider several areas: (a) strengthening the internal and external validity of the ecological, family-centered PBS approach; (b) promoting the generalization of improvements across all family routines; (c) empirical evaluation of collateral effects; and (d) expanding sequential analysis to document the presence of new coercive patterns of parent-child interaction. These areas are discussed below.

**Strengthening the internal and external validity of the ecological, family-centered PBS approach.** Future research should focus on strengthening the internal and external validity of the ecological, family-centered PBS approach to assessment and intervention. The internal validity of the findings would be strengthened by employing an experimental single-subject research design that allows for the empirical documentation of a functional relation between the implementation of an intervention based upon the ecological, family-centered PBS approach and improvements in child behaviour and routine
participation. The internal validity of the findings would be further strengthened with a comparative statistical analysis of the change in coercive processes and constructive processes from baseline to intervention in order to unequivocally verify that implementation of the intervention was effective in improving parent-child interaction. The external validity of the findings would be strengthened if the survivability results of the intervention were replicated across multiple families that vary in terms of child age, family composition, ethnicity, as well as across a wider range of valued family routines.

**Promoting the generalization of improvements across all family routines.** Future research should focus on efficiently promoting the generalization of improvements in child behaviour, routine participation and parent-child interaction across all problematic family routines in a family’s life. *General case programming* (Horner & Albin, 1988) is a technology of generalization promotion that is comprised of the following steps: (a) define the instructional universe of a particular skill; (b) identify the full range of stimulus and response variation of the skill, (c) select a few examples that sample the range of stimulus variation and response requirements; (d) teach the examples selected for training to a criterion level of mastery, and (e) test with non-trained examples to assess whether the general case has been taught. Applying general case programming to family-centered PBS would involve defining the universe of family routines that are problematic for a particular family, assessing the stimulus and response requirements of behaviour support to a child with a disability across all of the routines, selecting a few routines that sample the range of stimulus variation and response requirements, and testing for generalization in non-trained routines. The efficiency of the ecological, family-centered PBS approach may be enhanced
by future research that applies general case programming to the selection and training of family routines for intervention.

**Empirical evaluation of collateral effects.** In the current study, Aidan’s mother reported generalized drinking and eating-related behaviour from Aidan (e.g., expanded diet beyond target foods, generalization of drinking and eating in new settings and with new people), as well as improvements in Aidan’s communication (e.g., increased complexity of vocalizations), socialization (e.g., improved interest in interacting with his mother), and learning (e.g., “reading” the symbols of his visual schedule). These collateral effects were not directly targeted during intervention but were attributed by Aidan’s mother to the implementation of the ecological, family-centered PBS intervention and Aidan’s associated improvements in behaviour and routine participation.

As noted above, coercive patterns of parent-child interaction potentially act as a barrier to new learning and experiences for children with developmental disabilities. These children become confined within the walls of the coercive processes that operate throughout their day. The ecological, family-centered PBS approach is associated with the disintegration of coercive patterns of parent-child interaction and the development of constructive patterns of parent-child interaction. This transformation is associated with improvements in child behaviour and participation in family routines. Perhaps the more opportunity that these children experience the full four steps of the constructive process of parent-child interaction, the more likely they will learn that new experiences are not aversive and that they will often result in positive consequences. The constructive process replicated throughout family life may disrupt these children’s insistence on sameness, and these new experiences might open the child up to new learning that reaches beyond the behaviours directly targeted by
intervention. Given this, future research should examine the extent to which implementation of interventions based upon the ecological, family-centered PBS approach are associated with improvements in child behaviour that is not directly targeted. The empirical evaluation of collateral effects might include collecting various measures of early language development, social development, and developmental functioning prior to intervention as a component to the comprehensive assessment process, during the implementation of the intervention, and the follow-up phase.

**Expanding sequential analysis to document the presence of new coercive patterns of parent-child interaction.** The Parent and Child Coding System (PACCS; Lucyshyn, Laverty, et al., 2007) was effective in documenting the patterns of parent and child interaction that occurred within the target family routines of this study (i.e., cup drinking and dinner routines). Specifically, PACCS was able to reliably document the presence of four-step coercive and constructive patterns of parent-child interaction. Interestingly, when I was coding parent-child interactional data using PACCS, I detected a coercive pattern of parent-child interaction that has not been described in the literature. This prospective coercive process involves the following steps: (a) parent demand, (b) child problem behaviour/inappropriate request for tangible, (c) parent withdrawal of demand/compliance with child request for tangible, and (d) child termination of problem behaviour.

This prospective coercive process appears to involve a dual function of problem behaviour, creating an escape/tangible-motivated coercive process. For example, Aidan’s mother asked him to sit at the table for dinner. Aidan protested by crying and physically resisting his mother’s attempts to get him to the table. In addition to Aidan’s protests, he
presented demands of his mother to give him his bottle, to make him his toast, to cuddle away from the table, etc. (i.e., items or activities that he associated with his predictable but problematic dinner routine). Aidan’s mother responded by withdrawing her demand for Aidan to sit at the table and giving him his bottle, toast, and/or cuddling with him away from the table. Aidan responded to his mother’s submission to these requests by calming down.

The presence of this prospective escape/tangible-motivated coercive pattern of parent-child interaction potentially explains the variable child problem behaviour data documented in the initial parent training and maintenance sub-phases of intervention. Percentage of steps completed data indicate that Aidan was able to successfully complete the cup drinking and dinner routines (i.e., he drank all of his liquid from the cup, he ate all of the food on his plate). This suggests that Aidan’s mother’s implementation of the PBS plan was effective in addressing Aidan’s escape-motivated problem behaviour (i.e., the disintegration of the four-step escape-motivated coercive process). What the plan may not have been effective in addressing was Aidan’s tangible-motivated problem behaviour that was operating in concert with his escape-motivated problem behaviour. Problem behaviour that continued to occur in the routines included Aidan stuffing his mouth with food, banging or drumming on the table, and short vocal outbursts or singing in between bites, all of which Aidan’s mother reported were trivial. Aidan terminated these behaviours as soon as he was given his reinforcer (i.e., iPod) or was asked to have one more sip/bite, which signaled the coming presentation of his reinforcer. If the prospective escape/tangible-motivated coercive process were operating as hypothesized, Aidan engaged in the trivial problem behaviour documented in intervention to directly obtain his iPod or to be asked to drink/eat, which signaled to him that he would soon receive his iPod. Given this *post hoc* analysis, future research should
expand the sequential analysis of parent-child interaction to validate the existence of this prospective escape/tangible-motivated coercive process. The current version of PACCS is not configured to capture this prospective coercive process of interaction. An update to PACCS would be necessary to conduct a study aimed at validating the existence of an escape/tangible-motivated coercive process. Doing so would contribute to an expanded understanding of coercive processes operating in family routines, and to the design of interventions that efficiently ameliorated these more subtle and complex patterns of parent-child interaction.
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Dear Parent/Caregiver,

The purpose of this letter is to inform you of an opportunity to participate in a research study aimed at helping families of young children with developmental disabilities that engage in problem behaviour in the home. The study is entitled, “Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour.” This study will be conducted in the Faculty of Education at the University of British Columbia. The principal investigator of the study is Dr. Joseph Lucyshyn, Associate Professor in the Faculty of Education. The graduate student researcher and co-investigator of the study is Stephen Chinn. This research is for the fulfillment of degree requirements for a Masters degree.

The purpose of this study is to examine the effectiveness, acceptability, sustainability, and durability of an ecological, family-centered, positive behaviour support approach to behaviour intervention with families of children with developmental disabilities and problem behaviour. The approach is based on best practice in behavioural support with families of children with developmental disabilities. The approach emphasizes a collaborative process in which family members and the graduate student researcher work together in equal partnership to improve problem behaviour of the child with a disability and overall quality of life.

The study will evaluate the extent to which behaviour interventions:

1. Improve child problem behaviour and parent-child interaction in two valued family routines, such as dinner, free-time while a parent is busy, and getting ready for bed;
2. Promote your child’s successful participation in home-based routines;
3. Empower you and other family members to successfully support your child; and
4. Enhance the quality of life of your child and family.

Participation in the study would involve you and your family collaborating with the graduate student researcher in four family support activities and in four research activities. The four family support activities are:

1. Comprehensive assessment of child problem behaviour and family ecology,
2. Collaborative development of a behaviour support plan,
3. Implementation support to help you use behaviour supports in family routines, and
4. Follow-up support for up to three months.

The four research activities are:

1. A preliminary assessment to identify two family routines and to identify problem
   behaviour;
2. Videotaped observations in two family routines, under conditions that may produce
   problem behaviour, to confirm the purpose of problem behaviour;
3. Videotaped observations in two family routines to measure child and family outcomes;

The entire research study will require approximately 10 months to complete. During the first
7 months, your child and family will be involved in support or research activities for 2 to 4
hours per week. This will vary based on family available time and need. During the final 3
months of the study, your child and family’s involvement in research and support activities
will decrease to 1 to 2 hours per month. Support activities will include conducting
assessments, collaboratively designing a behaviour support plan, and helping the family
implement plans in valued home routines. All activities will be scheduled on a day and at a
time that is convenient for family members.

The family that chooses to participate also may experience five benefits. First, your child’s
problem behaviour may decrease to low, acceptable levels in the two selected family
routines. Second, your child may develop new positive behaviours and adaptive skills that
help him or her participate in the two family routines. Third, your quality of parent-child
interaction may improve during the two routines, and your parental knowledge and skills in
supporting your child during the two routines may be enhanced. Fourth, your family will be
compensated for your time involved in the study with an honorarium of $100.00. Lastly, a
potential benefit is that other families who have children with disabilities may be helped
through the sharing of knowledge gained in this study.

If you are interested in participating in the study, or learning more about the study, please
contact Dr. Joseph Lucyshyn at (xxx) xxx-xxxx. You may also contact Stephen Chinn at
(xxx) xxx-xxxx. Alternatively, you may also contact the agency representative who gave or
sent to you this introductory letter. At that time, if you give the agency representative
permission to release your name and phone number, I will contact you by telephone to
answer any questions that you may have. In any event, thank you for your time and
consideration.

Sincerely,

Joseph M. Lucyshyn
Assistant Professor
Faculty of Education
University of British Columbia

Stephen Chinn
Graduate Student (Masters)
Faculty of Education
University of British Columbia
APPENDIX B

Consent Form: Participation in Screening Process

Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour

Dear Parent/Guardian,

The purpose of this form is to request consent for your, for your child with a disability, and for other family members’ (focus child’s brother or sister) participation in a screening process for a research study. The study is entitled, “Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour.” This study will be conducted in the Faculty of Education at the University of British Columbia. The principal investigator of the study is Dr. Joseph Lucyshyn, Associate Professor in the Faculty of Education. The graduate student researcher and co-investigator of the study is Stephen Chinn. This research is for the fulfillment of degree requirements for a Masters degree. Your family is invited to participate in the screening process because a representative of a local social service agency has recommended your child and family’s participation. After reading the consent form, if you have any questions, I will be happy to answer them to ensure that the screening procedures are fully understood.

Purpose of this Study

The purpose of this study is to examine the effectiveness, acceptability, sustainability, and durability of an ecological, family-centered, positive behaviour support approach to behaviour intervention with families of children with developmental disabilities and problem behaviour. The approach is based on best practice in behavioural support with families of children with developmental disabilities. The approach emphasizes a collaborative process in which family members and the graduate student researcher work together in equal partnership to improve problem behaviour of the child with a disability and overall quality of life. The study will evaluate the extent to which behaviour interventions:

1. Improve child problem behaviour and parent-child interaction in two valued family routines, such as dinner, free-time while a parent is busy, and getting ready for bed;
2. Promote your child’s successful participation in home-based routines;
3. Empower you and other family members to successfully support your child; and
4. Enhance the quality of life of your child and family.

Summary of Family Support and Research Activities

Participation in the study would involve you and your family collaborating with the graduate student researcher in four family support activities and in four research activities. The four family support activities are:

1. Comprehensive assessment of child problem behaviour and family ecology,
2. Collaborative development of a behaviour support plan,
3. Implementation support to help you use behaviour supports in family routines, and
4. Follow-up support for up to three months.

The four research activities are:

1. A preliminary assessment to identify two family routines and to identify problem behaviour;
2. Videotaped observations in two family routines, under conditions that may produce problem behaviour, to confirm the purpose of problem behaviour;
3. Videotaped observations in two family routines to measure child and family outcomes;

The entire research study will require approximately 10 months to complete. During the first 7 months, your child and family will be involved in support or research activities for 2 to 4 hours per week. This will vary based on family available time and need. During the final 3 months of the study, your child and family’s involvement in research and support activities will decrease to 1 to 2 hours per month. Support activities will include conducting assessments, collaboratively designing a behaviour support plan, and helping the family implement plans in valued home routines. All activities will be scheduled on a day and at a time that is convenient for family members.

Screening Process

We have developed a screening process to find out if your child and family are eligible to participate in the study. When you first contact us by telephone, we will review the criteria for participation, and answer any questions you may have. We will then decide together whether to proceed with the screening process. The specific steps in the process are described below.

1. Preliminary interview. We will first meet with you in your home or place that is more convenient for you and conduct a preliminary interview (i.e., assessment of family routines and brief functional assessment). The interview is focused on understanding your child’s problem behaviour during valued but problematic, home-based family routines. The interview will take approximately 1 hour.
2. **Preliminary observations.** If the interview indicates that your child is a good fit for the study, then we will request permission to conduct observations in the home of your family during the identified problematic home routines. With your permission, I will observe you and your child during the identified routines in which problem behaviour regularly occur. During the observation, I will use an observation form to gather data about child problem behaviours. A minimum of two to three observations will be conducted. Each observation will last between 3 and 15 minutes.

3. **Informed consent for study participation.** If the observations confirm the presence of durable problem behaviours in two family routines in the home, then we will invite you to participate in the study. At that time, we will ask you to read and sign an informed consent letter for participation.

**Potential Risks and Safeguards**

If you agree to participate and permit your child and family to participate in the screening process, you will need to consider four potential risks: (1) physical risk, (2) psychological risk, (3) legal, and (4) loss of confidentiality.

1. **Physical risk.** Because the child participant engages in problem behaviour, there is more than a minimal risk that the child or other family members may experience physical injury during the study. Every precaution will be taken to minimize this risk:
   a. Members of the research team have extensive experience working with children who engage in problem behaviour in the home;
   b. Behaviour support strategies will focus on preventing behaviour problems and on teaching positive behaviour that are designed to replace problem behaviour;
   c. Observation sessions and training and support activities will be terminated if the child begins to engage in medium to high intensity problem behaviour; and
   d. As needed, the research team will be available to assist the family, the child, and other family members during the observation sessions and during training and support activities.

2. **Psychological risk.** Because the family will be observed during two home-based routines and will participate in training and support activities, the parents, child, or other family members may experience psychological risk. That is, the parents, child, or other family members may feel some discomfort or stress during these activities. Several steps will be taken to guard against this risk:
   a. During observation sessions, the observer will maintain a low profile and not call attention to himself;
   b. Any person in the family can terminate an observation session at any time; and
   c. “Family-friendly” features of the family support process should help to reduce stress associated with the study (e.g., the family’s schedule determines the meeting/observation/training schedules; collaborative development of support plans).

3. **Legal risk.** A potential but minimal risk relates to the legal requirements around reporting abuse if it is witnessed. If members of the research team witness any abuse of the focus
child by any person, they will have to report it to the appropriate provincial authorities. This risk will be guarded against in the following ways:

a. The study focuses on providing family members with positive, non-punitive ways to prevent and manage child problem behaviour. Family members who develop these skills are unlikely to engage in child maltreatment; and

b. If abuse is observed, the parents will be informed and invited to participate in reporting the incident. The research team will then refer you to appropriate family support services or a community agency.

4. *Loss of confidentiality.* There is a risk that the child participant or other family members may experience a loss of confidentiality. To guard against this risk we will:

a. Change names of all persons, places, and programs described in the study;

b. Allow access to information only to members of the research team;

c. Keep all data, notes, and videotapes in a locked file in a secure office; and

d. Data collected solely for the study will be destroyed 5 years after the study in completed.

**Potential Benefits**

By participating in the screening process, you and your child will experience one of two potential benefits:

1. *Participation in a family support research study.* If the screening process indicates that your child is a good fit for the family support study, you will be invited to participate in the research study. The family that chooses to participate also may experience five benefits.

   a. Your child’s problem behaviour may decrease to low, acceptable levels in two selected family routines;

   b. Your child may develop new positive behaviours and adaptive skills that help him or her participate in two family routines;

   c. Your quality of parent-child interaction may improve during two routines, and your parental knowledge and skills in supporting your child during the two routines may be enhanced;

   d. Your family will be compensated for your time involved in the study with an honorarium of $100.00; and

   e. A potential benefit is that other families who have children with disabilities may be helped through the sharing of knowledge gained in this study.

However, because behavioural and quality of life improvements cannot be assured, it is possible that you and your family may not experience all of the benefits listed above.

2. *Assessment report and recommendations.* If the screening process does not indicate that your child is a good fit for the study, then we will provide you with two benefits:

   a. Summary of the preliminary interview and/or observations;

   b. Recommendations for behaviour support that are based on the interview and/or observations; and
c. Referral to appropriate, alternative sources for family and behavioural support in your community.

Alternatives

If during the screening process, you choose not to participate in the study, we will refer you to appropriate, alternative sources for family and behavioural support in your community.

Rights as a Research Participant

Your participation and that of your child and other family members is voluntary. Your decision whether or not to participate and to allow your child and other family members to participate will not have any affect on your child’s education, the provision of support from a community agency, or future opportunities for behaviour consultation and support. If you agree to participate and allow your child and other family members to participate, you are free to withdraw consent and refuse to continue your participation and that of your child and family. You may do so at any time without penalty or loss of benefits to which you, your child, or other family members are otherwise entitled. Terminating participation in the study will have no negative impact on the graduate student’s thesis research whatsoever. If you withdraw early in the research, the graduate student will recruit another family for the study. If you withdraw later, the graduate student will complete his thesis, with your permission, using the data gathered up to the point of study termination. By signing the consent form, you do not waive any of your legal rights. If you have any questions, please contact Dr. Joseph Lucyshyn at (xxx) xxx-xxxx or Stephen Chinn at (xxx) xxx-xxxx. If you have any concerns about your rights or treatment as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604) 822-8598. Your signature below indicates that you have received a copy of this consent form for your records. Your signature indicates that you consent to your, your child with a disability, and other family members’ (i.e., siblings) participation in the screening process.

Sincerely,

Joseph M. Lucyshyn, Ph.D. 
Assistant Professor
Faculty of Education
University of British Columbia
xxx-xxx-xxxx

Stephen Chinn, B.A. (Hons.) 
Graduate Student Researcher (Masters)
Faculty of Education
University of British Columbia
xxx-xxx-xxxx
Consent Form for Participation in Screening Process

Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour

Principal Investigator: Joseph Lucyshyn, Ph.D., Faculty of Education, UBC
Graduate Student Researcher: Stephen Chinn, B.A. (Hons.), Faculty of Education, UBC

I have read and received a copy of this consent form and have had an opportunity to ask questions about the research project and the screening process. I have received an adequate description of the purpose, goals, and procedures of the screening process, and I consent to participate in the screening process. I understand that all information will be kept confidential, that my participation is voluntary, and that I may withdraw consent at any time and discontinue participation at any time without penalty or loss of benefits to which I am otherwise entitled, and that I am not waiving any legal claims, rights, or remedies. By signing below, I agree to participate in the screening process of the research study of parent-child interaction in family routines under the terms stated above.

__________ YES I consent to participate in the screening process and give permission for my child with a disability and other family members (i.e., focus child’s brother and/or sister) to participate in the screening process.

__________ NO I do not consent to participate in the screening process, and my child with a disability, and other family members do not have my permission to participate in the screening process.

Focus Child’s Name: ____________________________________________

Sibling’s Name: _______________________________________________

Parent’s Name: _______________________________________________

Parent/Guardian’s Signature: ___________________________ Date: ____

Parent/Guardian’s Signature: ___________________________ Date: ____

Witness: ___________________________________________ Date: _____

PLEASE RETURN THIS PAGE TO:
Stephen Chinn, B.A. (Hons.), Graduate Student Researcher
We are interested in learning how to help your parents support (name of focus child) at different routines at home. We plan to do this by conducting a study. Before we can begin the study, we need to find out if ________ is eligible to participate in the study. We wish to do so by conducting a screening process with your family. We will interview your parents and observe ________ and you and your family doing different routines together in the home.

We also would like to ask you to participate in these different routines in the home. If you agree to participate, we will ask you to do what you typically do during these different routines; that is, listen to your parents and cooperatively do the routines. We will make sure that while you and your family are doing these routines together, everybody stays safe.

When we begin, a person will visit your home to observe you, ________, and your parents in during different home routines. We will observe once or twice to find out if ________ engages in problem behaviour during these routines. When an observer is observing these routines and collecting data on problem behaviour, he or she will do his or her best to stay out of the way. Also, the screening data will only be shared with members of the research team.

If the screening process shows that ________ is a good fit for the study, then we will invite your family to participate in the study. During the study we will help your family create a happier life for ________ and your family. We will do so by helping your family successfully support ________ in two family routines in the home. If the screening process does not show ________ to be a good fit for the study, then we will give your parents a summary of the information that we gathered, and suggest to them some ways that they can support ________’s participation in the routines that we observed.

While we are observing ________, you, and other family members, if you do not want to participate, just tell us. You won't get into any trouble. If you don't want to participate at all, you don't have to. Just say so. Also, if you have any questions about what you will be doing, or if you cannot decide, just ask us if there is anything you would like us to explain. If you want to try, please sign your name on the line below. Your parent(s) have already told us that it is okay with them if you want to participate in the screening process. Remember, you don't have to, and once you start you can rest or stop whenever you like.

Name of participant: ______________________________________________________________________

_________ YES I agree to participate in the screening process.

_________ NO I do not agree to participate in the screening process.
APPENDIX C

Consent Form: Participation in Research Study

Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour

Dear Parent/Guardian,

The purpose of this form is to request consent for your, for your child with a disability, and for other family members’ (focus child’s brother or sister) participation in a research study. The study is entitled, “Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour.” This study will be conducted in the Faculty of Education at the University of British Columbia. The principal investigator of the study is Dr. Joseph Lucyshyn, Associate Professor in the Faculty of Education. The graduate student researcher and co-investigator of the study is Stephen Chinn. This research is for the fulfillment of degree requirements for a Masters degree. Your family is invited to participate in this research study because a representative of a local social service agency has recommended your child and family’s participation. After reading the consent form, if you have any questions, I will be happy to answer them to ensure that the screening procedures are fully understood.

Purpose of this Study

The purpose of this study is to examine the effectiveness, acceptability, sustainability, and durability of an ecological, family-centered, positive behaviour support approach to behaviour intervention with families of children with developmental disabilities and problem behaviour. The approach is based on best practice in behavioural support with families of children with developmental disabilities. The approach emphasizes a collaborative process in which family members and the graduate student researcher work together in equal partnership to improve problem behaviour of the child with a disability and overall quality of life. The study will evaluate the extent to which behaviour interventions:

1. Improve child problem behaviour and parent-child interaction in two valued family routines, such as dinner, free-time while a parent is busy, and getting ready for bed;
2. Promote your child’s successful participation in home-based routines;
3. Empower you and other family members to successfully support your child; and
4. Enhance the quality of life of your child and family.

Summary of Family Support and Research Activities

Participation in the study would involve you and your family collaborating with the graduate student researcher in five family support activities and in two research activities. The entire research study will require approximately 10 months to complete. During the first 7 months, your child and family will be involved in support or research activities for 3 to 4 hours per week. This will vary based on family available time and need. During the final 3 months of the study, your child and family’s involvement will decrease. This period to time is called follow-up. It will begin after your child has improved in his or her behaviour in the two target family routines. During follow-up, research and support activities will occur 1 to 2 hours per month. The five family support activities are described below.

1. **Preliminary assessment.** Preliminary assessment activities will involve two interviews (i.e., assessment of family routines and a brief functional assessment) with you and other family members at a time and place of your convenience. These interviews will last 1 to 2 hours. The purpose of the interviews is to identify two valued family routines in the home and to develop a preliminary understanding about your child’s problem behaviour. Following the interviews, we will conduct two to three pilot observations in the identified routine. The purpose of these observations will be to verify the occurrence and purpose of your child’s problem behaviour. Each observation will last between 3 and 15 minutes.

2. **Comprehensive assessment.** A comprehensive assessment is performed after the preliminary assessment is completed. First, a functional assessment interview will be completed. This will involve one meeting of 1 to 2 hours in length. We will then confirm the results of the functional assessment interview by conducting a series of observations of parent-child interaction in the two identified family routines in the home. The observations will occur during one session and will take approximately 1 to 2 hours to complete. This assessment will help us develop a thorough understanding of the why your child engages in problem behaviour. This information will help us develop an effective behaviour support plan. Second, we will complete a family ecology assessment. This will involve one meeting of 1 to 2 hours in length in which we learn about your family’s strengths, supports, goals, and stressors. This information will help us develop a plan that is a good fit for your family.

3. **Positive behaviour support plan design.** Following assessment activities, we will collaborate with you to build a behaviour support plan for the two problematic family routines. This will be done through a series of two meetings. Each meeting will last 1 to 2 hours. During a planning meeting, family members and the graduate student researcher will review assessment information and build a support plan that fits well with the routine. The plan will include several behaviour support strategies. It will be designed to improve child problem behaviour, parent-child interaction, and the success of the routine.

4. **Implementation support.** Training and support to help you and your family members implement the support plan in the identified routines will occur approximately twice per
week and involve 1 to 2 hours. During these meetings, the graduate student researcher will teach you and your family members how to implement support strategies with your child. Activities may include discussion of written instructions, role-play strategies, and coaching in the routine.

5. **Follow-up support.** After you have succeeded in improving child problem behaviour in the selected family routines, we will transition to a phase of research called follow-up support. The graduate student researcher will meet with your family once a month for 3 months to provide whatever support or retraining you may need.

The two research activities are described below.

1. **Videotaped observations.** Videotaped observations in two family routines will occur during the experimental phases of the study. These phases are baseline, intervention (i.e., initial training and support, maintenance support), and follow-up. Observation sessions will NOT occur on the same day as a training session. During an observation session an observer will videotape your child and family’s participation in the selected family routine. Each observation session will last up to 30 minutes. During baseline, observations will occur an average of 1 to 4 times per week over a period of 2 to 8 weeks. Approximately 10 observations will be completed. During intervention, observation sessions will occur an average of once a week over a period of 17 weeks. Approximately 16 observations will be completed. During follow-up, observation sessions will occur once a month for three months.

2. **Assessment of family functioning.** Another research activity that will take place is an assessment of your family’s well-being. This will occur at the beginning and end of the study. You will be asked to fill out four questionnaires about the overall quality of family life. Completing each questionnaire will take approximately 30 minutes.

**Potential Risks and Safeguards**

If you agree to participate and permit your child and family to participate in the screening process, you will need to consider four potential risks: (1) physical risk, (2) psychological risk, (3) legal, and (4) loss of confidentiality.

1. **Physical risk.** Because the child participant engages in problem behaviour, there is more than a minimal risk that the child or other family members may experience physical injury during the study. Every precaution will be taken to minimize this risk:
   a. Members of the research team have extensive experience working with children who engage in problem behaviour in the home;
   b. Behaviour support strategies will focus on preventing behaviour problems and on teaching positive behaviour that are designed to replace problem behaviour;
   c. Observation sessions and training and support activities will be terminated if the child begins to engage in medium to high intensity problem behaviour; and
d. As needed, the research team will be available to assist the family, the child, and other family members during the observation sessions and during training and support activities.

2. **Psychological risk.** Because the family will be observed during two home-based routines and will participate in training and support activities, the parents, child, or other family members may experience psychological risk. That is, the parents, child, or other family members may feel some discomfort or stress during these activities. Several steps will be taken to guard against this risk:
   a. During observation sessions, the observer will maintain a low profile and not call attention to himself;
   b. Any person in the family can terminate an observation session at any time; and
   c. “Family-friendly” features of the family support process should help to reduce stress associated with the study (e.g., the family’s schedule determines the meeting/observation/training schedules; collaborative development of support plans).

3. **Legal risk.** A potential but minimal risk relates to the legal requirements around reporting abuse if it is witnessed. If members of the research team witness any abuse of the focus child by any person, they will have to report it to the appropriate provincial authorities. This risk will be guarded against in the following ways:
   a. The study focuses on providing family members with positive, non-punitive ways to prevent and manage child problem behaviour. Family members who develop these skills are unlikely to engage in child maltreatment; and
   b. If abuse is observed, the parents will be informed and invited to participate in reporting the incident. The research team will then refer you to appropriate family support services or a community agency.

4. **Loss of confidentiality.** There is a risk that the child participant or other family members may experience a loss of confidentiality. To guard against this risk we will:
   a. Change names of all persons, places, and programs described in the study;
   b. Allow access to information only to members of the research team;
   c. Keep all data, notes, and videotapes in a locked file in a secure office; and
   d. Data collected solely for the study will be destroyed 5 years after the study in completed.

**Potential Benefits**

The family that chooses to participate also may experience five benefits. First, your child’s problem behaviour may decrease to low, acceptable levels in the two selected family routines. Second, your child may develop new positive behaviours and adaptive skills that help him or her participate in the two family routines. Third, your quality of parent-child interaction may improve during the two routines, and your parental knowledge and skills in supporting your child during the two routines may be enhanced. Fourth, your family will be compensated for your time involved in the study with an honorarium of $100.00. Lastly, a potential benefit is that other families who have children with disabilities may be helped through the sharing of knowledge gained in this study.
However, because behavioural and quality of life improvements cannot be assured, it is possible that you and your family may not experience all of the benefits listed above.

**Alternatives**

If during the screening process, you choose not to participate in the study, we will refer you to appropriate, alternative sources for family and behavioural support in your community.

**Rights as a Research Participant**

Your participation and that of your child and other family members is voluntary. Your decision whether or not to participate and to allow your child and other family members to participate will not have any affect on your child’s education, the provision of support from a community agency, or future opportunities for behaviour consultation and support. If you agree to participate and allow your child and other family members to participate, you are free to withdraw consent and refuse to continue your participation and that of your child and family. You may do so at any time without penalty or loss of benefits to which you, your child, or other family members are otherwise entitled. Terminating participation in the study will have no negative impact on the graduate student’s thesis research whatsoever. If you withdraw early in the research, the graduate student will recruit another family for the study. If you withdraw later, the graduate student will complete his thesis, with your permission, using the data gathered up to the point of study termination. By signing the consent form, you do not waive any of your legal rights. If you have any questions, please contact Dr. Joseph Lucyshyn at (xxx) xxx-xxxx or Stephen Chinn at (xxx) xxx-xxxx. If you have any concerns about your rights or treatment as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604) 822-8598. Your signature below indicates that you have received a copy of this consent form for your records. Your signature indicates that you consent to your, your child with a disability, and other family members’ (i.e., siblings) participation in the screening process.

Sincerely,

Joseph M. Lucyshyn, Ph.D.
Assistant Professor
Faculty of Education
University of British Columbia

Stephen Chinn, B.A. (Hons.)
Graduate Student Researcher (Masters)
Faculty of Education
University of British Columbia
Consent Form for Participation in Research Study

Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour

I have read and understood the attached letter of request to participate in the study entitled, “Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour.” I also consent to and authorize the release of information from biographical records to document birth date, most recent IQ score and test, diagnostic information, and medical records. I understand that all information will be kept confidential and that my participation and that of my child and other family members (i.e., focus child’s brother and/or sister) is entirely voluntary and that I, my child, or other family members may withdraw consent and refuse to participate at any time without any penalty or loss of benefits to which my family is otherwise entitled, and that I am not waiving any legal claims, rights, or remedies. I also understand that I will receive a copy of this letter of request for consent for my own records. My decision regarding my participation, that of my child with a disability, and that of other family members is indicated below.

__________ YES  I consent to participate in the research study and give permission for my child with a disability and other family members (i.e., focus child’s brother and/or sister) to participate in the research study.

__________ NO  I do not consent to participate in the research study, and my child with a disability, and other family members do not have my permission to participate in the research study.

Focus Child’s Name: __________________________________________________________

Sibling’s Name: __________________________________________________________

Parent’s Name: __________________________________________________________

Parent/Guardian’s Signature: ____________________________  Date: _______

Parent/Guardian’s Signature: ____________________________  Date: _______

Witness: ________________________________________________________________  Date: _______

PLEASE RETURN THIS PAGE TO:
Stephen Chinn, B.A. (Hons.), Graduate Student Researcher
Brother or Sister Assent Form: Research Study
(For children over the age of 13 years whom are capable of understanding)

We are interested in learning how to help your parents support (name of focus child) at during different routines at home. We plan to do this by conducting a study. We know that sometimes it's hard for ________ to do certain things with the family without getting upset. We would like to help him/her and your family with this. We would do this by teaching your parents ways to help ________ stay calm and happy during family routines in the home. We may also spend some time teaching ________ ways to get what he/she wants by using words or pictures instead of problem behaviour. The things that ________ and your parents will learn will be pretty positive.

We also would like to ask you to participate in these different routines in the home. If you agree to participate, we will ask you to do what you typically do during these different routines; that is, listen to your parents and cooperatively do the routines. We will make sure that while you and your family are doing these routines together, everybody stays safe. We will do our best to make ________’s life more enjoyable for him or her. By doing so, we also hope to make your life and that of your family’s life more enjoyable.

When we begin, a person will visit your home to videotape you, ________, and your parents in during different home routines. The person will videotape about twice a week at the beginning of our work together. Later, he or she will videotape you, ________, and your parents once or twice a month. He or she will do his or her best to stay out of the way. Later, we will look at the videotapes and learn if our help is working or not. We will make sure that only those people who need to see the videotape have a chance to see it. We would like to help your family for a pretty long time – up to six months.

By agreeing to participate, we believe we can help your family make a happier life for ________ and also for your family. Your participation also will help us learn better ways to support other families. While we are helping your family or while a person is videotaping, if you do not want to participate, just tell us. You won't get into any trouble. If you don't want to participate at all, you don't have to. Just say so. Also, if you have any questions about what you will be doing, or if you cannot decide, just ask us if there is anything you would like us to explain. If you want to try, please sign your name on the line below. Your parent(s) have already told us that it is okay with them if you want to participate. Remember, you don't have to, and once you start you can rest or stop whenever you like.

Name of participant: ___________________________________________________________

__________ YES I agree to participate in the screening process.

__________ NO I do not agree to participate in the screening process.
Videotaping Consent Form

Investigating the Survivability of an Ecological, Family-Centered, Positive Behaviour Support Approach to Behaviour Intervention with a Family of a Child with a Developmental Disability and Problem Behaviour

Consent: I understand that my participation in this study will involve videotaping of me, my child with a disability, and other family members in our home. I also understand that I may request that the researchers stop the videotaping at any time if I, or a member of my family, does not want to be videotaped. I also understand that all videotaped materials will be kept in a secure and locked location, and that only the researchers will have access to this material, unless I give my specific permission for it to be viewed by any other person.

My consent regarding the videotaping of my child’s participation and that of my family in this study is indicated below. I understand that I will receive a copy of this consent for my personal records.

__________ YES  I consent to the videotaping of my child and family.

__________ NO  I do not consent to the videotaping of my child and family.

Focus child’s name: _______________________________________________________

Sibling’s name: __________________________________________________________

Sibling’s name: __________________________________________________________

Parent signature: ___________________________________ Date: ________

Parent signature: ___________________________________ Date: ________

Witness signature: __________________________________ Date: ________

If I have questions or concerns about videotaping of my child or family, I may contact:

Dr. Joseph Lucyshyn
Faculty of Education
University of British Columbia
2125 Main Mall
Vancouver, BC V6T 1Z4

Stephen Chinn
OR
(xxx) xxx-xxxx
(xxx) xxx-xxxx
**APPENDIX D**

**Social Validity Evaluation**

Family:  
Date:  
Family member completing evaluation:  

The purpose of this questionnaire is to obtain information that will aid in: (a) the selection and improvement of behavioral support strategies implemented in the home by family members, and (b) the improvement of our process for providing families with behavioral consultation and support. Please circle the number that best describes your agreement or disagreement with each statement (1 = disagree, 5 = agree). You also have space to write comments or suggestions for change or improvement.

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<td>1. The goals of the behavior support plan are appropriate for my child.</td>
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<td>2. The goals of the plan are consistent with my family’s goals, values, and beliefs.</td>
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<td>3. The strategies and procedures used are difficult to carry out in the home.</td>
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<td>4. The goals of the behavior support plan are appropriate for my child.</td>
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<td>5. The outcomes of the support effort are beneficial for my child.</td>
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6. The outcomes of the support effort are beneficial to my family as a whole. | Disagree | Agree |
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Comments:

7. The support effort has caused some unanticipated problems in our family. | Disagree | Agree |
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Comments:

8. Training activities have been well organized, clear, and helpful. | Disagree | Agree |
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Comments:

9. The person(s) providing technical assistance has shown respect for our family’s values and beliefs. | Disagree | Agree |
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Comments:

10. Overall, this behavioral support effort has strengthened our family. | Disagree | Agree |
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Comments:
APPENDIX E

Goodness of Fit Survey for Behavior Support Plans Used by Families

Family:
Date:
Family member completing evaluation:
Routine:

Introduction: Research and practical experience show that the success of a support plan depends a great deal on whether the plan “fits” with the values and lifestyle of the family. The purpose of this survey is to understand the extent to which you believe the support plan developed for your son/daughter is a good fit for your family. Your responses will help us: (a) improve the quality of the plan, and (b) understand better how to build support plans that are most helpful. For the routine identified, please rate each question on a scale of one (1 – not at all) to five (5 – very well/much).

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1. Do you believe the research team understands your child’s needs in this routine?  
   
   Comments:

2. Do you believe the plan is based on an understanding of the reasons for problem behavior (i.e., escape or attention)?  
   
   Comments:

3. Does the plan really address your highest priority goals for your child and family in this routine?  
   
   Comments:

4. Do you understand what you are expected to do as part of this plan?  
   
   Comments:

5. Do you understand what is expected of other family members?  
   
   Comments:
6. Are you comfortable with what you and others are expected to do?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

7. Does the plan recognize and support your needs as a mother or father?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

8. Does the plan recognize and support the needs of other family members living in the home (e.g., siblings)?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

9. Overall, how well does the support plan fit with your family’s needs within this routine?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

10. Overall, how well does the plan fit with your values and beliefs about raising your child with a disability and creating a meaningful family life together?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

11. To what extent does the plan build off of successful strategies you were using?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:  

12. Will the plan, in the long run, disrupt family routines in the home to a point that stress and hardship will be created?  
   Not at All   Not Much   Can’t Tell   Well /Much   Very Well /Very Much  
   1   2   3   4   5  

Comments:
13. Does the plan recognize and build on your child’s and your family’s strengths?  

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Comments:

14. Does the plan make use of resources (e.g., help from your spouse, respite care) available to you and your family?  

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Comments:

15. To what extent would you like to see the use of available resources incorporated to a greater extent in your plan?  

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Comments:

16. All things considered, how difficult will it be or is it for you to use this support plan (e.g., time involved, coordination of tasks)?  

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Comments:

17. To what extent do you believe the support plan will be or is effective?  

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Comments:

18. Do you believe you can just keep using the support strategies for a long time (e.g., over one year) even if there is reduced contact with members of the research team?  

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Comments:
APPENDIX F

Family Ecology Interview

Family: 
Date: 
Family member completing evaluation:

1. What would you characterize as strengths of your family?

2. What might be some positive contributions that your child makes or has made to the family?

3. What are sources of stress in your family?
   a. What is the effect of your child’s problem behavior on you as a parent?
   b. What is the effect of your child’s problem behavior on the family as a whole?
   c. What are other sources of stress in the family?

4. What formal or informal resources have you used to improve the situation (e.g., respite care, participation in a parent support group, help with childcare and household chores from other family members)?

5. What are your sources of social support (e.g., someone with whom you discuss problems and find solutions; someone with whom you do leisure activities; someone who validates your worth as a person)?

6. What are your goals for your child? What are your goals for yourself as a parent? What are your goals for the family as a whole?
Functional Assessment Summary and Positive Behaviour Support Plan
Cup Drinking and Dinner Routines
Summer 2010

Cup Drinking Routine Functional Assessment Summary

Family Vision of a Successful Cup Drinking Routine

The cup drinking routine will occur between and 6:00 and 6:15 PM and last for approximately 10 minutes. The routine will occur at the table located in the family room of the home. Persons participating will be Aidan and mother.

Resources will include: (a) a cup of water or herbal tea, (b) a napkin, (c) chair, and (d) table. Possible additional materials may include ice cubes and lemon.

Aidan’s tasks are to: (a) come to the table when called, (b) sit in his chair, (c) drink all of the liquid from a cup, (d) use his napkin, and (e) put his cup in the sink when he is finished.

Mother’s tasks are to: (a) pour water or herbal tea in a cup, (b) place a napkin on the table, (c) call Aidan to come to the table to sit and have a drink, (d) give the cup to Aidan, and (e) request that Aidan place his cup in the sink when he is finished.

Child-centered goals for Aidan are to: (a) learn to drink water or herbal tea from a cup, and (b) to transition away from using a bottle when drinking.

Family-centered goals are: (a) to promote Aidan’s typical development, (b) to increase the amount of liquid consumed by Aidan to promote health and future toilet training efforts.

Cup Routine and Goals

The cup routine is defined as any period of time in which Aidan is supposed to sit at the dinner table and drink a beverage (e.g., water, tea) from a cup. The goals for Aidan in this routine are to: (a) come to the table when called, (b) sit in his chair, (c) drink all of the beverage from a cup, and (d) put his cup in the sink when he is finished.

Purposes of Problem Behavior

The behavioral assessment indicates the Aidan engages in problem behavior during the cup routine to: (a) obtain continued/extended access to a preferred item or activity (tangible), and (b) to avoid going to the table and drinking from a cup (escape/avoid).
Setting Events

Contextual events that set the stage for, but do not directly trigger, problem behavior include: (a) Aidan being engaged in a preferred activity before a request/demand is asked of him, (b) Aidan’s lack of choices during the day, (c) Aidan’s lack of predictability in his schedule, (d) Aidan’s history of drinking from a bottle, and (e) Aidan being satiated (i.e., not thirsty) before participating in the cup routine.

Triggers

The antecedent events that trigger Aidan’s problem behaviors are: (a) mother removing a preferred item/activity from Aidan in order to transition him to the table to have a drink, and (b) mother presenting a non-preferred/challenging request/demand to Aidan (e.g., “Come to the table.” “Have a drink.”), and/or physically assisting him to complete the desired task (e.g., mother guiding Aidan to the table, mother holding a cup to Aidan’s mouth, etc.).

Functional Assessment Summary Statements

When mother (a) presents a non-preferred/challenging request/demand to Aidan (e.g., “Have a drink from the cup.”), (b) physically assists Aidan to complete a desired task (e.g., mother holds the cup to Aidan’s mouth), and/or (c) attempts or removes a preferred item/activity from Aidan in order for him to transition to the table (e.g., mother takes away Aidan’s bottle), Aidan will engage in various problem behaviors (e.g., physical aggression/self-injurious behavior, disruptive/destructive/dangerous behavior, inappropriate requests/demands, inappropriate physical assistance, leaving assigned area/running away, negative vocalizations, physical resistance). Aidan engages in these behaviors to (a) escape, avoid, or delay the expectations placed on him (e.g., mother often withdraws, reduces, and/or delays her requests); and/or (b) gain or regain access to a preferred tangible item/activity (e.g., mother allows Aidan continued or extended time with a desired item/activity). This is more likely to occur if Aidan is not thirsty, is sick or tired, if he is engaged in a preferred activity prior to the routine, is unaware of the schedule or expectations of the routine, if he does not have a lot of choice during his day, and because of his history of continued bottle use.
Dinner Routine Functional Assessment Summary

Family Vision of a Successful Dinner Routine

The dinner routine will occur between 6:30 and 7:30 PM and last for approximately 15 to 30 minutes. The routine will occur at the table located in the family room of the home. Persons participating will be Aidan and mother.

Resources will include (a) tableware and utensils (i.e., plate/bowl, spoon/fork); (b) healthy foods including a protein (e.g., chicken), vegetables (e.g., carrots, broccoli, etc.), fruit (e.g., apples, grapes, etc.), carbohydrates (e.g., pasta, potatoes, etc.), and alternatives (e.g., eggs, beans, etc.); (c) a cup of water or herbal tea; (d) a napkin; and (e) a chair and table.

Aidan’s tasks are to: (a) come to the table when called for dinner, (b) sit and remain in his chair (plate or bowl of food already in front of him or placed there soon after he sits down), (c) eat at least 1/3 of the presented food, (d) use utensils to eat his dinner (if applicable), (e) drink water or herbal tea from a cup, (f) use a napkin, (g) signal or ask to leave the table when he is finished eating, and (h) take his plate and cup and place them on the kitchen counter.

Mother’s tasks are to: (a) call Aidan to the table to sit for dinner; (b) serve food on plates or bowls and place these items on the table before or soon after Aidan sits at the table; (c) sit next to Aidan; (d) eat and drink her own meal; (e) support and encourage Aidan to stay at the table, eat his food, to use his utensils, to drink from his cup, and to use his napkin; (f) dismiss Aidan after he signals/asks to leave the table, (g) remind Aidan, as needed, to bring his plate and cup to the kitchen counter; and (h) begin to clear the table.

Child-centered goals for Aidan are to: (a) eat a healthier, wider range of foods; (b) eat at least 1/3 of the food presented to him; (c) use utensils appropriately during his meal; (d) drink water or herbal tea from a cup; (e) use a napkin to wipe his hands and mouth; and (f) to stay seated at the table with mother for the duration of the meal.

Family-centered goals are to: (a) become more independent due to successful a successful dinner routine (e.g., ability to go to different places to eat in the future), and (b) reduce mother’s anxiety/stress regarding food related problem behaviors (e.g., mother not having to worry about meals during travels, not worrying about limited quantities of preferred foods, etc.).

Dinner Routine and Goals

The dinner routine is defined as any period of time in which Aidan is supposed to sit at the dinner table and eat the food that is presented to him during the meal. The goals for Aidan in this routine are to: (a) come to the table when called for dinner, (b) sit and remain in his chair, (c) eat at least 1/3 of the presented food, (d) use utensils to eat his dinner (if applicable), (e) drink water or herbal tea from a cup, (f) use a napkin, (g) signal or ask to leave the table when he is finished eating, and (h) take his plate and cup and place them on the kitchen counter.
Purposes of Problem Behavior

The behavioral assessment indicates the Aidan engages in problem behavior during the dinner routine to: (a) obtain continued/extended access to a preferred item or activity (tangible), and (b) avoid going to the table and eating his dinner (escape/avoid).

Setting Events

Contextual events that set the stage for, but do not directly trigger, problem behavior include: (a) Aidan being engaged in a preferred activity before a request/demand is asked of him, (b) Aidan’s lack of choices during the day, (c) Aidan’s lack of predictability in his schedule, (d) Aidan’s limited array of foods, and (e) Aidan being satiated (i.e., not hungry) before participating in the dinner routine.

Triggers

The antecedent events that trigger Aidan’s problem behaviors are: (a) mother removing a preferred item/activity from Aidan in order to transition him to the table to eat dinner, and (b) mother presenting a non-preferred/challenging request/demand to Aidan (e.g., “Come to the table.” “Take a bite.”), and/or physically assisting him to complete the desired task (e.g., mother guiding Aidan to the table, mother holding food to Aidan’s mouth, etc.).

Functional Assessment Summary Statements

When mother (a) presents a non-preferred/challenging request/demand to Aidan (e.g., “Have a bite of banana.”), (b) physically assists Aidan to complete a desired task (e.g., mother holds food to Aidan’s mouth), and/or (c) attempts or removes a preferred item/activity from Aidan in order for him to transition to the table (e.g., mother turns off the television in order for him to eat dinner at the table), Aidan will engage in various problem behaviors (e.g., physical aggression/self-injurious behavior, disruptive/destructive/dangerous behavior, inappropriate requests/demands, inappropriate physical assistance, leaving assigned area/running away, negative vocalizations, physical resistance). Aidan engages in these behaviors to (a) escape, avoid, or delay the expectations placed on him (e.g., mother often withdraws, reduces, and/or delays her requests); and/or (b) gain or regain access to a preferred tangible item/activity (e.g., mother allows Aidan continued or extended time with a desired item/activity). This is more likely to occur if Aidan is not hungry, is sick or tired, if he is engaged in a preferred activity prior to the routine, is unaware of the schedule or expectations of the routine, if he does not have a lot of choice during his day, and because of his limited food preferences.
Positive Behavior Support Plan – Cup Drinking and Dinner Routines

Contextual Fit Considerations

1. Behaviour support for non-targeted problematic family routines – The cup and dinner routines were not the only family routines identified by mother as problematic and stressful. The family experiences problems in the non-targeted routines such as bedtime and transitions in community settings.
   a. Sleeping issues have a significant impact on mother’s stress and functioning; therefore, the research team will provide behavior support in the bedtime routine once the second targeted routine (i.e., dinner) is in the maintenance phase of the research project. The timing of this support is based upon maintaining the integrity of the research design.
   b. Aidan’s behavior consultant, behavior interventionist (BI), and respite worker will be invited to collaborate and learn the strategies involved with the cup drinking and dinner routines to allow mother the option to leave Aidan in the care of these individuals when she feels the need to “get away” for a period of time.

2. Teach mother stress management and coping skills – The goal of these contextual fit considerations is to address and offer healthier coping strategies to manage mother’s high levels of stress.
   a. Dr. Lucyshyn will offer mother training in mindfulness practices. The aim is to provide her with a method to promote personal well-being, and with specific strategies to clear her mind of what is causing her stress in the moment so that she can approach her daily responsibilities from a calm and more “present” state of mind.
   b. Mother will be encouraged to continue her participation in her monthly parent support group.

3. Increased free time and social opportunities – Mother is a self-described extrovert, enjoys the company of others, and likes to be active. The following strategies are proposed to increase her free time and social opportunities.
   a. During the initial sessions of the initial training sub-phase of intervention in each targeted routine, Stephen will take the lead in implementing the behavior support strategies with Aidan to allow mother the option of staying in the home for the duration of the routine or to have some free time in which she can participate in an activity of her choosing (e.g., approximately 1 hour of free time).
   b. Mother will plan to have at least one social day/night for herself every month to increase her enjoyment and social opportunities.
Setting Event Strategies

1. *Address any physical factors that may impact the targeted routines (e.g., satiation, illness, and fatigue).*

   a. Aidan is more likely to engage in problem behavior when he is asked to participate in the cup or dinner routines if he is satiated (i.e., not thirsty or hungry) prior to implementing the routine. To ensure that Aidan is thirsty and/or hungry, limit his liquid and food intake 1-2 hours prior to doing the routine. In order to create a situation where Aidan is thirsty and motivated to drink, it will be important for us to conduct the initial cup routine sessions *prior* to dinnertime (e.g., right after Aidan and mother get home from daycare/work). Mother will ask the daycare not to give Aidan access to liquids for 1 hour prior to leaving for the day.

   b. Illness and fatigue can be addressed by reducing the demands of the routine (e.g., reduce the amount of liquid in his cup/food on his plate) and/or increasing the amount of reinforcement for desired behavior (e.g., increase the frequency and amount of time Aidan has with the reinforcer) in the short term to ensure his success, while still getting him to participate in the routine.

2. *Limit Aidan’s pre-routine access to highly preferred items/activities and conduct the routine in a distraction-free environment.*

   a. Aidan is more likely to engage in problem behavior when he is asked to participate in the targeted routines if he is engaged in a highly preferred activity (e.g., watching a video) prior to implementing the routine. It is important for us to ensure that access to highly preferred items/activities is only available to Aidan during the routine. We have routine-only rewards for Aidan that he has access to only when it is time for him to drink or eat (e.g., iPod, portable DVD player, new videos, etc.).

   b. Working in a distraction free environment will help Aidan to focus on the demands of the routine, rather than being distracted by more enjoyable activities or environments.

3. *Provide Aidan with a predictable schedule and clear expectations.*

   a. This can be done via consistent use of his (1) visual schedule to provide a predictable beginning and end to the routine, and (2) visual contingency map to clearly communicate the expectations within the routine (see preventative strategies).

4. *Offer Aidan choice of the materials that will be used in the routine.*

   a. Give Aidan as many choices as possible within the routine. For example, we will offer Aidan the choice of which type of cup he would like to use, choice of cutlery, choice of order in which to eat foods, which reward he would like to earn for successful participation, etc.
5. The interventionist will promote initial change in the routine with Aidan transfer stimulus control to mother when appropriate.

a. During the initial interventionist training sub-phase of intervention, it is better to have initial intervention occur away from mother. Stephen will work with Aidan on appropriate drinking and eating behaviors. This will allow Stephen to focus exclusively on the child, without upsetting mother. Mother will be given the choice to stay in the home or to leave to participate in an activity of her choosing for the duration of the intervention session.

b. When Aidan is successfully drinking and eating with Stephen, stimulus control will be transferred to mother by pairing her with reinforcement and fading in her requests to eat and drink.

6. Promote the generalized expansion of Aidan’s diet by selecting meals from foods identified using general case programming and a preference assessment.

a. We will identify a universe of foods that mother wants Aidan to eat. We will select ten target foods that sample the range of characteristics (e.g., taste, texture, mode of eating, etc.) of all the foods in the identified universe. The identified foods for the dinner routine included chicken, sausage, carrot, cucumber, apple, banana, banana chip, cracker, hummus, and potato.

b. A preference assessment of the target foods will determine the order in which they are presented to him during training (see preventative strategies).

Preventative Strategies

1. Use a visual schedule to provide a visual representation of each step required to complete both the cup and dinner routines.

a. The visual schedule will be comprised of Picture Communication Symbols (PCS) that depict each step of the targeted routines. Both routines consist of the following steps: (1) walk to the table; (2) sit down; (3) eat dinner (dinner only); (4) drink from the cup; (5) use a napkin; (6) signal that Aidan’s finished dinner (e.g., “All done.”); and (6) take his plate, cup, and cutlery to the sink.
b. We will: (1) tell Aidan what routine he is about to participate in; (2) show and read Aidan the steps that make up the target routine; (3) refer to the visual schedule at various points of the routine; and (4) read the schedule one last time, at the end of the routine, and remove each step from the schedule that has been completed. See the Teaching Strategies section for a detailed description of how we will teach Aidan to read and understand his visual schedule.

2. Use a visual contingency map to provide a visual representation of the positive and negative expectations within the routine.

a. The visual contingency map will be comprised of PCS that depict the positive and negative expectations and contingencies of the targeted routines. The visual communicates a positive contingency that when Aidan: (1) sits at the table, (2) displays “nice” hands, (3) stays quiet, and (4) eats and drinks, he will receive access to his chosen reinforcer (e.g., iPod). The visual also communicates a negative contingency that when Aidan: (1) stands up, (2) bangs his hands, (3) throws food, (4) yells, or (5) spits, he will not receive access to his chosen reinforcer (i.e., if he engages in five or more of these negative behaviors).

b. We will: (1) show and read Aidan the positive and negative contingencies of the target routine, (2) reinforce his successful participation in following the expectations of the positive contingency by giving him access to his chosen reinforcer, and (3) not provide access to his chosen reinforcer if he engaged in five or more of the negative behaviors. See the Teaching Strategies section for a detailed description of how we will teach Aidan to read and understand his visual contingency map.

3. Use a “break” visual to cue Aidan to ask for a break appropriately vs. using problem behavior (This strategy was discontinued at mother’s request in October 2010).

a. We will encourage Aidan to use his “break” visual as a way to ask appropriately for either more time with his preferred item/activity or for a break from the demands of the routine. The “break” visual will have 4 PCS tokens representing a request for more time/a break. Aidan may take a token off the visual and pass it to mother to ask for more time/a break. He will only have four opportunities (tokens) to make these requests during the routine.

b. We will: (1) show Aidan his “break” board and tell him how many breaks he has remaining (i.e., a total of four breaks per session), (2) let him know that he can take a break at any point of the routine, (3) prompt him to take a break before he engages in problem behavior, and (4) reinforce appropriate attempts at asking for a break by giving him a 60-second break from the demands of the routine. See the Teaching Strategies section for a detailed description of how we will teach Aidan to ask for more time/a break using his “break” visual.
4. *Ensure that your requests for Aidan to participate in the routine are the clear antecedents to his appropriate compliance.*

a. We want to ensure that Aidan’s appropriate behavior is contingent upon your requests and not irrelevant triggers (e.g., removal of the iPod, removal of your hand from over his plate, etc.). Present clear instructions to Aidan (e.g., “Walk to the table,” “Have a sip,” “Take a bite,” “Wait,” etc.) and prompt him to successfully comply with your requests within 2-5 seconds (e.g., physically guide him to the table, physically assist him to take a bite of food, physically block his attempts at putting too much in his mouth, etc.).

b. Use the least intrusive prompt as possible that will ensure Aidan’s success. We will be conscious of fading your prompts as quickly as possible. We will also work on fading the number of requests presented to Aidan within the routine in order to promote his independent participation.

5. *Introduce new foods to Aidan by fading in the type of food.*

a. A preference assessment determined the hierarchy of foods that will be introduced to Aidan. Aidan only accepted crackers and partially accepted a banana chip (i.e., he placed it in his mouth); the other targeted foods were only touched to Aidan’s lips.

b. We will begin with the most preferred of the non-preferred foods (i.e., cracker then banana chip) and progress to the least preferred of the non-preferred foods (i.e., the other targeted foods). When the percentage of trials of acceptance (i.e., Aidan accepted and swallowed the preferred food within 30 seconds of presentation) is above 80% for two to three consecutive sessions, a new food in the hierarchy of non-preferred foods will be introduced. This stimulus fading procedure will continue until Aidan accepts all foods targeted for intervention.

6. *Increase the portion size of new foods eaten by Aidan by fading in increasing amounts of food.*

a. Once Aidan is successfully “tasting the food,” the amount he is expected to eat will gradually increase. Aidan will be presented with pea-sized amounts on the spoon/fork. When the percentage of trials is above 80% (i.e., Aidan accepts and swallows the food within 30 seconds of presentation) for 2-3 consecutive sessions, the portion size will increase by a specified amount (1/4 of a spoonful, 1/2 of a spoonful, 3/4 of a spoonful). This step will continue until Aidan is consuming a portion size that is nutritionally appropriate for his age (e.g., full child-size spoonful of food).
7. *Use the “wait” procedure to promote Aidan’s appropriate eating* (This strategy was added in February 2011).

   a. For foods that Aidan enjoys, he has a tendency to eat very quickly and stuff too much into his mouth. This causes him to have to chew for prolonged periods of time and to sometimes spit out his food. To counter this: (1) allow Aidan to have no more than three bites of food in his mouth at one time, (2) after his third bite, tell him to, “Wait,” and physically block his access to the food (e.g., place your hand over his plate), (3) ask or signal for Aidan to place his utensil on the table, and (4) continue this “wait” procedure until Aidan has swallowed all of the food in his mouth. Ensure to reestablish your request (e.g., “Take a bite.”) as the antecedent for Aidan to take a bite and not the removal of your hand from his plate. We will be aware to fade all of these prompts as soon as we can.

Teaching Strategies

1. *Teach Aidan how to read and understand the symbols that represent each step of his visual schedules.*

   a. This will be taught within the routine through the review and daily use of the visual schedule. Aidan will be taught how to organize, understand, and interact with symbols that represent each step of the cup routine.

   b. At the beginning of every cup routine session, mother will approach Aidan and he will be asked to help organize the steps to the routine. Mother will verbally identify each symbol and physically assist Aidan to place it on his visual schedule in the proper temporal order. For example, mother will show Aidan the “Come to the table” symbol and help him place it in the first box. This will be done with each of the remaining symbols.

   c. We will also teach Aidan that he may remove a symbol from the visual schedule once he successfully completes a step. When Aidan completes a step, mother will verbally inform him that he completed a step and she will physically assist him to remove the corresponding symbol from the schedule.

2. *Teach Aidan how to read and understand the expectations of the routine on his visual contingency map.*

   a. This will be taught within the routine through the review and use of the visual contingency map. Aidan will be taught that the symbols on his visual contingency map represent both positive and negative expectations and their corresponding contingencies.

   b. We will teach Aidan that access to his chosen reward is contingent on fulfilling the positive expectations posted on his visual contingency map.
c. He will also be taught that if he engages in five or more of the negative expectations posted on his visual contingency map, he will not be granted access to his chosen reinforcer.

3. Teach Aidan how to appropriately request for more time to play or for a break from the routine using the “break” visual (This strategy was discontinued at mother’s request in October 2010).

a. Aidan will be taught that if he removes a “break” token from the visual and hands it to mother, he will receive 60 seconds of extended time with a preferred item/activity or a 60-second break from the demands of the routine.

b. We will: (1) initiate teaching by making a routine-related request (e.g., “Come to the table.” “Have a sip of your drink.”); (2) before Aidan engages in major problem behavior, physically assist him to remove a token from the visual and give it to mother; the tokens will also be paired with one/two-word requests (e.g., “More please.” “Break please.”); (3) honor his request for more time by praising him for asking nicely and we will set a visual timer for 60 seconds and give him his requested time; and (4) when the visual timer chimes, reinitiate the routine request and remind Aidan that if he wants more time/a break, he can use his visual to ask appropriately. We will repeat this process as many times as Aidan has tokens left on his visual.

c. Aidan will also be taught that he has a limited number of these requests per session (i.e., four requests for extended time or for a break).

4. Teach Aidan to try and eat new foods.

a. This will be taught using a number of strategies reported in other sections of this plan: (1) general case programming (see setting event strategies), (2) a preference assessment (see setting event strategies), (3) fading in types of food (see preventative strategies), (4) fading in increasing amounts of food, and (5) appropriate reinforcement procedures for compliance and noncompliance (see consequence strategies).

5. Teach Aidan appropriate eating using the “wait” procedure (This strategy was added in February 2011).

a. Waiting for an appropriate amount of time in between bites before taking another bite will be taught using the “wait” procedure (see preventative strategies). This procedure will likely be used (1) early in the routine when Aidan is eating foods that he prefers, or (2) when Aidan really wants access to his chosen reinforcer. Be aware of the pace that he is eating and use this procedure as needed.
Consequence Strategies

1. Reimburse Aidan for every successful compliant behavior and/or step successfully completed.

   a. We will verbally praise Aidan and give him access to his chosen reinforcer when he successfully completes desired behaviors within 3-5 seconds.

   b. We will start with a 1:1 schedule of reinforcement for successful drinking/eating and work towards increasing this ratio. The end goal is to give Aidan his chosen reinforcer as a terminal reinforcer (i.e., at the end of a successful routine).

   c. If Aidan engages in five or more problem behaviors during the routine, do not give him access to his chosen reinforcer (as per the visual contingency map strategy; see preventative strategies).

2. Reimburse Aidan for asking appropriately for a break (This strategy was discontinued at mother’s request in October 2010).

   a. If Aidan requests a break before acting out (and has break symbols on his board), we will praise him for asking for a break appropriately and we will honor his request with a 60-second break. The emphasis here is to reward Aidan for asking for what he wants appropriately, versus using his problem behavior to get what he wants.

3. Redirect minor problem behaviors:

   a. Redirect him back to appropriate behavior by appropriately prompting him to complete the immediate demand;

   b. Reviewing the visual schedule, review the expectations of the routine, and/or review what he will receive upon successful completion of the activity;

   c. Remind him that he can take a break, if he has tokens remaining (the “break” strategy was discontinued at mother’s request in October 2010); and

   d. If he is stuffing his mouth during dinner, use the “wait” procedure.

4. Escape extinction for major problem behaviors:

   a. Stay calm/neutral;

   b. If Aidan engages in physical aggression/self-injurious behaviour, these behaviours are blocked and he is redirected to the task at hand;

   c. If Aidan attempts to leave the table, he is blocked and redirected to drinking from cup or eating from plate;
d. If Aidan leaves the table, he is physically assisted to return to the table and sit in his chair, and then redirected to drink or eat;

e. If Aidan engages in food refusal behaviour, the non-removal of cup/fork procedure is implemented. Aidan is asked to have a sip/bite. The cup/fork is held to his mouth until he takes a sip/bite (he is not force fed). If he takes a sip/bite, the cup/fork is removed. If needed, this procedure is continued for the duration of the routine. If he does not drink/eat after 1 hour, the cup/fork is touched to Aidan’s lips (without requiring him to drink/eat) and the session is terminated. Attention is not given to Aidan’s refusal behaviour once the routine was terminated.
# APPENDIX H

## Implementation Checklist – Cup Drinking and Dinner Routines

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I addressed any physical factors that may have impacted the cup routine (e.g., satiation, illness, fatigue). For example, I limited Aidan’s food and liquid intake 1-2 hours prior to doing the routine.</td>
<td>Yes</td>
<td>No</td>
<td></td>
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<tr>
<td>2.</td>
<td>I limited Aidan’s pre-routine access to highly preferred items/activities (e.g., no iPod, no videos, no bottle).</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I implemented the cup routine in a distraction-free environment.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I offered Aidan choice of the materials that will be used in the routine (e.g., type of cup, type of reward).</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I used a visual schedule to provide a visual representation of each step required to complete the cup routine.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I used a visual contingency map to provide a visual representation of the positive and negative expectations within the routine.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I reminded Aidan, before he engaged in problem behavior, that he can request for more time to play or for a break from the routine if he asks appropriately using the “break” visual.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I ensured that my requests for Aidan to participate in the routine were the clear antecedents to his appropriate compliance.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I reinforced Aidan with verbal praise for every successful behavior and/or step successfully completed. I gave him access to his chosen reinforcer based upon the appropriate schedule of reinforcement (e.g., 1:1, 3:1, terminal reinforcer).</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I reinforced Aidan with verbal praise paired with 60 seconds of extended access to his preferred item/activity or a break from the routine when he asked for extra time or a break using a symbol and/or verbal request (as long as he had “break” symbols available).</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>I redirected Aidan’s minor problem behavior:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. I redirected him back to appropriate behavior by appropriately prompting him to complete the immediate demand.</td>
<td>Yes</td>
<td>No</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>b. I reviewed the visual schedule, reviewed the expectations of the routine, and/or reviewed what he will receive upon successful completion of the routine.</td>
<td>Yes</td>
<td>No</td>
<td>NA</td>
</tr>
</tbody>
</table>
c. If he had tokens remaining, I redirected him to his “break” visual and reminded him to ask for more time or a break from the routine in an appropriate manner.

d. If he stuffed his moth during dinner, I used the “wait” procedure.

12. Escape extinction for major problem behavior:

   a. I remained calm/neutral.
   Yes No NA

   b. I blocked any physical aggression/self-injurious behaviour redirected him back to the task.
   Yes No NA

   c. I blocked Aidan from leaving the table and redirected him to drink from cup or eat from plate.
   Yes No NA

   d. If Aidan left the table, I physically assisted him to return to the table to sit, and then I redirected him to drink or eat.
   Yes No NA

   e. If Aidan engaged in food refusal behaviour, I used the non-removal of cup/fork procedure.
   Yes No NA

<table>
<thead>
<tr>
<th>Problem Behaviors During Routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major</td>
</tr>
<tr>
<td>2. Minor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Validity</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The goals of the routine are acceptable and important.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. The strategies are useful and effective.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. The strategies are difficult to use.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. Aidan is successfully participating in the routine.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. I believe the cup routine is successful.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

Maintenance Support Plan
Cup Drinking and Dinner Routines
Summer 2011

Maintaining Positive Parent-Child Interactions in an Escape-motivated Routine

In this past year, you have accomplished a great deal in building positive parent-child interactions. In its essence, you have learned to transform a problematic pattern of parent-child interaction to a constructive pattern of interaction.

Problematic parent-child interaction
Parent request → Child problem behavior → Parent submission → Child calm state

Constructive parent-child interaction
Parent request → Child compliance → Parent positive attention → Child calm state

The purpose of this following self-monitoring form is to help you self-evaluate whether the old, problematic pattern of interaction that disrupts the routine has reasserted itself. Simply answer the three questions below at least once a week to evaluate your interactions with Aidan. See the attached form for weekly self-evaluation use.

1. Did Aidan engage in any problem behavior when presented with a request (e.g., “Have a bite of carrot.”) or a non-preferred item/activity (e.g., Aidan only had less-preferred foods on his plate)? YES or NO?

2. If Aidan engaged in problem behavior, did you withdraw, remove, or reduce the demand place upon him (e.g., stopped asking him to eat, give him only highly preferred/easy foods, reduce the amount of food on his plate, etc.)? YES or NO?

3. If you engaged in any of the behaviors mentioned above, did Aidan eventually calm down (e.g., become quiet/calm, be “good”)? YES or NO?

If the answer is YES to questions 1 and 2, or to all three questions, then recognize that the escape-driven problematic pattern of parent-child interaction has returned. If it is allowed to continue, the routine will get worse. To maintain your progress and success, it will be helpful to return to using the strategies described in the behavior support plan. The first few days will not be easy, as Aidan will try to continue to teach you to let him escape using his problem behavior. If, however, you re-implement the behavior support plan, depending on the surrounding circumstances, within a few days, Aidan will relearn to behave appropriately during the routine.
Basic Maintenance Support Plan

The purpose of this plan is to ensure that you can continue to succeed in supporting Aidan during the cup and dinner routines. As we have learned in the past year, there are events that occur in both Aidan and your life that make it difficult to maintain the success you have achieved in these routines. This has taught us that you will need to continue to implement the basic plan of support, and that you may have to take a few steps back or implement additional strategies when things change for Aidan or you. This maintenance plan outlines the basic plan, and how to best respond when potentially disruptive changes occur. See the attached Maintenance Implementation Checklist for monthly self-evaluation use.

1. Address any physical factors that may have an impact on the routine:
   a. Ensure that Aidan is thirsty/hungry by limiting his liquid and food intake 1-2 hours prior to doing the routine.
   b. Illness and fatigue can be addressed by reducing the demands of the routine (e.g., reduce the amount of liquid/food) and increase the amount of reinforcement for desired behavior (e.g., increase the frequency and amount of time Aidan has with his chosen reinforcer).

2. Limit Aidan’s pre-routine access to highly preferred items/activities (e.g., no iPod, no videos, no bottle, etc.). Implement the routine in a distraction-free environment (if possible).

3. Offer Aidan choice of the materials that will be used in the routine (e.g., type of cup/utensil, order of food, type of reward, etc.).

4. Use a visual schedule to provide a visual representation of each step required to complete the routine.

5. Use the visual contingency map to provide a visual representation of the positive and negative expectations within the routine.

6. Ensure that your requests for Aidan to participate in the routine are the clear antecedents to his appropriate behavior. Do not let irrelevant things become triggers for desired behaviors (e.g., taking away the iPod in between bites, removing your hand from the plate during the “wait” procedure, etc.).

7. Use the “wait” procedure during dinner to promote Aidan’s appropriate eating. This usually applies to Aidan’s preferred foods.

8. Reinforce Aidan with verbal praise for every successful compliant behavior and/or step successfully completed. Give him access to his chosen reinforcer based upon the appropriate schedule of reinforcement (e.g., 1:1, 5:1, terminal reinforcer, etc.).
9. Redirect minor problem behavior:
   a. Appropriately prompting him to complete the immediate demand (e.g., physically assist him to the table, raise the fork to his mouth, etc.).
   b. Review the visual schedule and the visual contingency map.
   c. If he is stuffing his mouth, use the “wait” procedure.

10. Escape extinction for major problem behavior:
    a. Stay calm/neutral;
    b. If Aidan engages in physical aggression/self-injurious behaviour, these behaviours are blocked and he is redirected to the task at hand;
    c. If Aidan attempts to leave the table, he is blocked and redirected to drinking from cup or eating from plate;
    d. If Aidan leaves the table, he is physically assisted to return to the table and sit in his chair, and then redirected to drink or eat;
    e. If Aidan engages in food refusal behaviour, the non-removal of cup/fork procedure is implemented. Aidan is asked to have a sip/bite. The cup/fork is held to his mouth until he takes a sip/bite (he is not force fed). If he takes a sip/bite, the cup/fork is removed. If needed, this procedure is continued for the duration of the routine. If he does not drink/eat after 1 hour, the cup/fork is touched to Aidan’s lips (without requiring him to drink/eat) and the session is terminated. Attention is not given to Aidan’s refusal behaviour once the routine was terminated.
Potential Obstacles and Relapse Prevention Strategies

It is important to consider events that may have a negative impact on Aidan’s ability to participate successfully in the cup and dinner routines. It is also important to consider events that may have a negative impact on your ability to implement the support plan. Below are events that should be considered along with strategies to address each event.

1. Aidan is ill, tired, anxious, or agitated.
   Strategies:
   • Offer more preferred liquids/foods to Aidan that day.
   • Reduce the demands of the routine (e.g., reduce the amount of liquid in his cup/food on his plate).
   • Increase the amount of reinforcement for desired behavior (e.g., increase the frequency and amount of time Aidan has with his chosen reinforcer).

2. Aidan experiences a major change in his schedule (e.g., dinner guest, extended break from school, family is away on vacation, etc.).
   Strategies:
   • Implement the strategies in Event 1 if he is anxious or agitated.
   • Prep Aidan for upcoming changes using a daily or weekly visual schedule.
   • Develop a social story or visual script explaining to Aidan why the major change is happening and how he can cope.

3. Mother is ill, tired, and/or stressed.
   Strategies:
   • Implement the strategies in Event 1.
   • Take the time to practice your mindfulness techniques before participating in the routine. Ask your support personnel to stay for an extra 10 minutes while you center yourself.
   • Practice your mindfulness techniques every day, especially in times where you are not ill, tired, and/or stressed. This practice will allow you to center yourself when times appear tough.
5. Mother over-thinks during the routine (e.g., mother assumes that a strategy not found in the behavior support plan will serve the routine, mother thinks that a strategy found in the behavior support plan is too hard or not useful, etc.).

Strategies:
- Review the Maintenance Implementation Checklist to remind yourself of the strategies of the routine. Remember that these strategies have brought Aidan and you success and happiness in the targeted routines. The basic plan works and we are continuing to work on fading strategies out as soon as we can.
- When thinking about “outside” strategies, consider how they might fit within the logic of the constructive and problematic pathways. If they will somehow inadvertently reinforce Aidan’s problem behavior, stop them immediately. Examples of this happening include: allowing Aidan access to mother-controlled materials (e.g., DVD player, various visuals) during the routine, playing drumming games in between bites, etc. These “strategies” have led to increases in problem behavior at times in the last year.

6. Mother does not recognize extremely minor problem behaviors that might lead to major problem behaviors. When Aidan only has non-preferred food left on his plate, he will often engage in escape-motivated behaviors. Some of these behaviors will seem extremely minor, even positive; however, they are seeds to reestablishing the problematic parent-child interaction.

Strategies:
- Keep the four steps of the constructive parent-child interaction in mind throughout the routine. If Aidan does anything but comply with your requests, it might be the beginning of a more serious escape-driven problem behavior.
- Recognize when Aidan only has less-preferred foods left on his plate and be ready to implement the appropriate strategies to prompt him to eat the rest of his meal (e.g., non-removal of food procedure, etc.).
- Aidan playing with his fork can quickly turn into banging at the table. Signal or ask him to put down his fork when he is not using it.
- Grabbing his cup when asked to have a bite is a way to avoid eating his food. Take the cup from him and prompt him to comply with the bite request.
- Prolonged chewing in between bites can also be viewed as a minor delay behavior. If you think Aidan is delaying having to eat non-preferred foods by chewing too long, request that he have another bite and prompt him as needed to get him to comply (as long as he has room in his mouth for another bite).
Maintaining Positive Parent-Child Interactions in an Escape-motivated Routine

Date: Implementer:

In this past year, you have accomplished a great deal in building positive parent-child interactions. In its essence, you have learned to transform a problematic pattern of parent-child interaction to a constructive pattern of interaction.

Problematic parent-child interaction:
Parent request → Child problem behavior → Parent submission → Child calm state

Constructive parent-child interaction:
Parent request → Child compliance → Parent positive attention → Child calm state

The purpose of this following self-monitoring form is to help you self-evaluate whether the old, problematic pattern of interaction that disrupts the routine has reasserted itself. Simply answer the three questions below at least once a week to evaluate your interactions with Aidan. See the attached form for weekly self-evaluation use.

1. Did Aidan engage in any problem behavior when presented with a request (e.g., “Have a bite of carrot.”) or a non-preferred item/activity (e.g., Aidan only had less-preferred foods on his plate)?

   YES or NO?

2. If Aidan engaged in problem behavior, did you withdraw, remove, or reduce the demand place upon him (e.g., stopped asking him to eat, give him only highly preferred/easy foods, reduce the amount of food on his plate, etc.)?

   YES or NO?

3. If you engaged in any of the behaviors mentioned above, did Aidan eventually calm down (e.g., become quiet/calm, be “good”)?

   YES or NO?

If the answer is YES to questions 1 and 2, or to all three questions, then recognize that the escape-driven problematic pattern of parent-child interaction has returned. If it is allowed to continue, the routine will get worse. To maintain your progress and success, it will be helpful to return to using the strategies described in the behavior support plan. The first few days will not be easy, as Aidan will try to continue to teach you to let him escape using his problem behavior. If, however, you re-implement the behavior support plan, depending on the surrounding circumstances, within a few days, Aidan will relearn to behave appropriately during the routine.
## Maintenance Implementation Checklist – Cup Drinking and Dinner Routines

### Date:  
Implementer:  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I addressed any physical factors that may have impacted the cup routine (e.g., satiation, illness, fatigue). For example, I limited Aidan’s food and liquid intake 1-2 hours prior to doing the routine.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I limited Aidan’s pre-routine access to highly preferred items/activities (e.g., no iPod, no videos, no bottle).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I implemented the cup routine in a distraction-free environment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I offered Aidan choice of the materials that will be used in the routine (e.g., type of cup, type of reward).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I used a visual schedule to provide a visual representation of each step required to complete the cup routine.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I used a visual contingency map to provide a visual representation of the positive and negative expectations within the routine.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I ensured that my requests for Aidan to participate in the routine were the clear antecedents to his appropriate compliance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>During dinner, I used the “wait” procedure to promote Aidan’s appropriate eating.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I reinforced Aidan with verbal praise for every successful behavior and/or step successfully completed. I gave him access to his chosen reinforcer based upon the appropriate schedule of reinforcement (e.g., 1:1, 3:1, terminal reinforcer).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 10. | I redirected Aidan’s minor problem behavior:  
a. I redirected him back to appropriate behavior by appropriately prompting him to complete the immediate demand.  
b. I reviewed the visual schedule, reviewed the expectations of the routine, and/or reviewed what he will receive upon successful completion of the routine.  
c. If he had tokens remaining, I redirected him to his “break” visual and reminded him to ask for more time or a break from the routine in an appropriate manner.  
d. If he stuffed his moth during dinner, I used the “wait” procedure. |  |  |  |
11. Escape extinction for major problem behavior:

   f. I remained calm/neutral. Yes | No | NA
   
g. I blocked any physical aggression/self-injurious behaviour redirected him back to the task. Yes | No | NA
   
h. I blocked Aidan from leaving the table and redirected him to drink from cup or eat from plate. Yes | No | NA
   
i. If Aidan left the table, I physically assisted him to return to the table to sit, and then I redirected him to drink or eat. Yes | No | NA
   
j. If Aidan engaged in food refusal behaviour, I used the non-removal of cup/fork procedure. Yes | No | NA

### Problem Behaviors During Routine

<table>
<thead>
<tr>
<th></th>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major</td>
<td>0 1 2 3 4 5</td>
<td>0 1 2 3 4 5</td>
</tr>
<tr>
<td>2. Minor</td>
<td>0 1 2 3 4 5</td>
<td>0 1 2 3 4 5</td>
</tr>
</tbody>
</table>

### Social Validity

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The goals of the routine are acceptable and important.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. The strategies are useful and effective.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. The strategies are difficult to use.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. Aidan is successfully participating in the routine.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. I believe the cup routine is successful.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>