EXAMINING PREDICTOR VARIABLES ON TREATMENT OUTCOME IN THE EARLY SKILLS DEVELOPMENT PROGRAM

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ABSTRACT

Saskatchewan Health has provided funding to Saskatoon and North Battleford District Health Boards to establish a school and home-based program for very aggressive kindergarten and grade one children. The purpose of the Early Skills Development Program is to assist young children who present with aggressive behaviours develop more socially acceptable interaction styles so they are less at risk for social rejection and/or neglect (Child and Youth Services, 2002).

Pre- and post-intervention data was collected on each child that participated in the 10-week Early Skills Development Program using the Child Behavior Checklist- Teacher Report Form, which includes eight clinical scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Aggressive Behavior, and Delinquent Behavior. In addition, demographic data was collected on each child, including age, grade, gender, diagnosis of a behaviour/mood disorder, medication status, number of siblings, family status, and whether the family is on social assistance.

Evaluations of the efficacy of the Early Skills Development Program have been conducted at year one (Mykota, 1999), year two (Headley, 2000), and year three (Leibel, 2002) since the program's commencement. Each study found statistically significant deceases in aggression overall. However, closer examination of individual children who participated revealed that several participants either had more significant decreases in aggressive behaviour or were not successful at all. The finding of some children showing greater improvement over others, or no improvement at all, suggests the need for

examination of the predictive variables that affect treatment outcomes in the Early Skills Development Program.

The objective of the following research studies was to determine, in three parts, what variables will predict treatment outcome in the Early Skills Development Program. Based on previous research (e.g., Dumas & Wahler, 1983; Kazdin & Crowley, 1997; Lochman et al, 1985) and the extant data available, three studies were conducted. Study one examined child demographic variables as they relate to the prediction of treatment outcome in aggressive behaviour. Results from study one indicated that the demographic variables available in the extant data base were not predictive of treatment outcome in the Early Skills Development Program.

Study two investigated psychological variables, based on ratings on the Child Behavior Checklist-Teacher Report Form, in the prediction of treatment outcome. Results from study two indicated that children who showed symptoms of being withdrawn, having social problems, and the presence of anxiety and depression showed increased benefit from the Early Skills Development Program.

Study three examined contextual variables that related to the child's family in predicting the behaviour change of participants immediately following treatment in the Early Skills Development Program. Results indicated that participants who did not have any siblings at the time of treatment showed a significantly higher decrease in aggression than those who did have siblings.

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To my family, I thank you for the many years of support, encouragement, and confidence that has enabled me to pursue my dreams. Finally, to my husband Damien, your loyalty, patience, and encouragement have truly culminated in creating a foundation that has allowed me to after my goals and complete my work. Your sacrifices and commitment have been far greater than I could have expected. My deepest gratitude goes to you.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Table **Page**

LIST OF APPENDICES

NEED FOR THE STUDIES

Over the past several years, violence and aggression have become more and more evident in our society. Violence and aggression are seen on multiple levels, including world terrorism, domestic violence, street gangs, and playground bullying. Evidence of school violence, in particular, is growing at a disconcerting rate. It's hard to forget the tragedies of school violence like the deaths of students at Columbine High School in Littleton, Colorado or W.R. Myers High in Taber, Alberta. Everyday and everywhere we turn we are reminded of violence and aggression in our world. Even more disturbing is the percentage of violence committed by school age children.

More than ever before, there is an enormous amount of attention paid to the aggression we are seeing in our schools, both from professionals and from the public. Research and common sense both tell us that severe aggression at an early age increases the risk for future problems, including delinquency, substance abuse, and mental health issues. What is required is a commitment of public funding to prevent the trajectory of aggression from manifesting into what becomes a societal problem that is far more costly than early intervention. However, more often than not empirical evidence is needed to receive that funding. The need for comprehensive research is evident in order to provide these evidence based studies. Moreover, comprehensive research is needed that provides predictive studies that inform practitioners about the clients for whom these programs work best.

GENERAL OVERVIEW

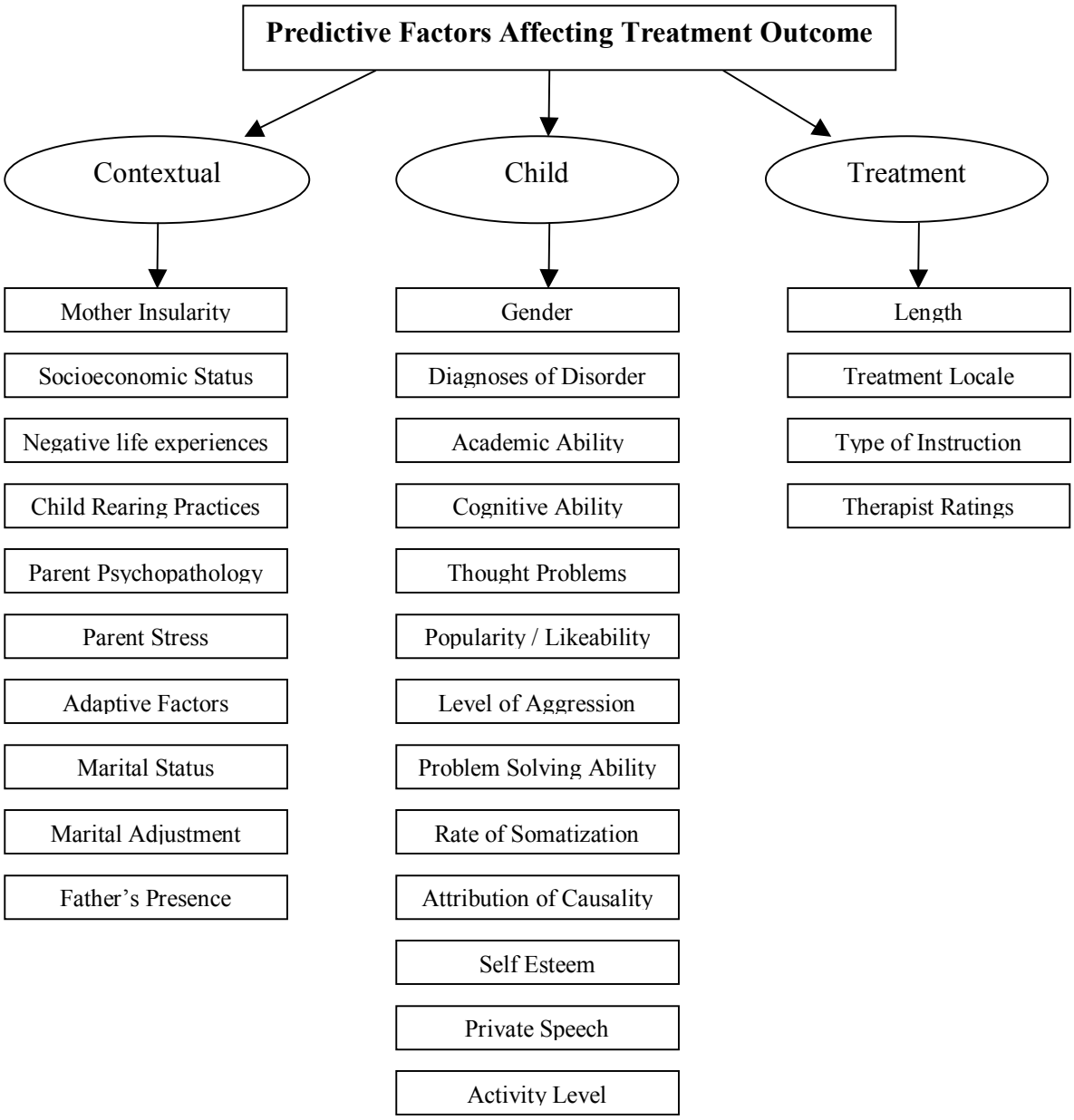
Beginning in 1996/97, Saskatchewan Health took the initiative to provide funding for an early intervention program for elementary school children who presented with aggressive behaviour. The program is called the Early Skills Development Program and has been operating in both Saskatoon and North Battleford. Over the course of the Early Skills Development Program, evaluations have established the programs' efficacy. What has been less documented is evidence to substantiate or identify child and family demographic variables that may influence or predict treatment outcome. It is important to understand not only if a particular treatment is effective overall but why and with whom is it most effective. Results from predictive studies will direct clinicians and practitioners toward providing treatment to those who will most benefit, finding alternative therapy for those clients who need something different, or possibly supplementing existing treatments for those who need something more, all in order to improve overall treatment effectiveness.

Previous research based on similar programs indicates certain variables are indicative of greater success. For instance, more positive treatment outcomes have been found for females when compared to their male equivalents (Ansari et al., 1996). As well, results from Frankel et al. (1997) indicated several psychological factors have been related to treatment outcome, such that lower scores on a Likeability scale related more positively to treatment response as compared to higher scores on the Likeability scale.

The following diagram outlines specific variables found to predict treatment outcome and is based on existing literature. As the diagram illustrates, past research has found child, parent, family, and contextual factors, with little study on treatment factors,

to be predictive of treatment outcome in aggressive children. Child factors focus on behavioural, emotional, or intellectual aspects of the child (e.g., level of aggression, somatization, self-esteem, academic ability). Contextual factors highlight psychological and/or demographic characteristics of the child and family involved in treatment.

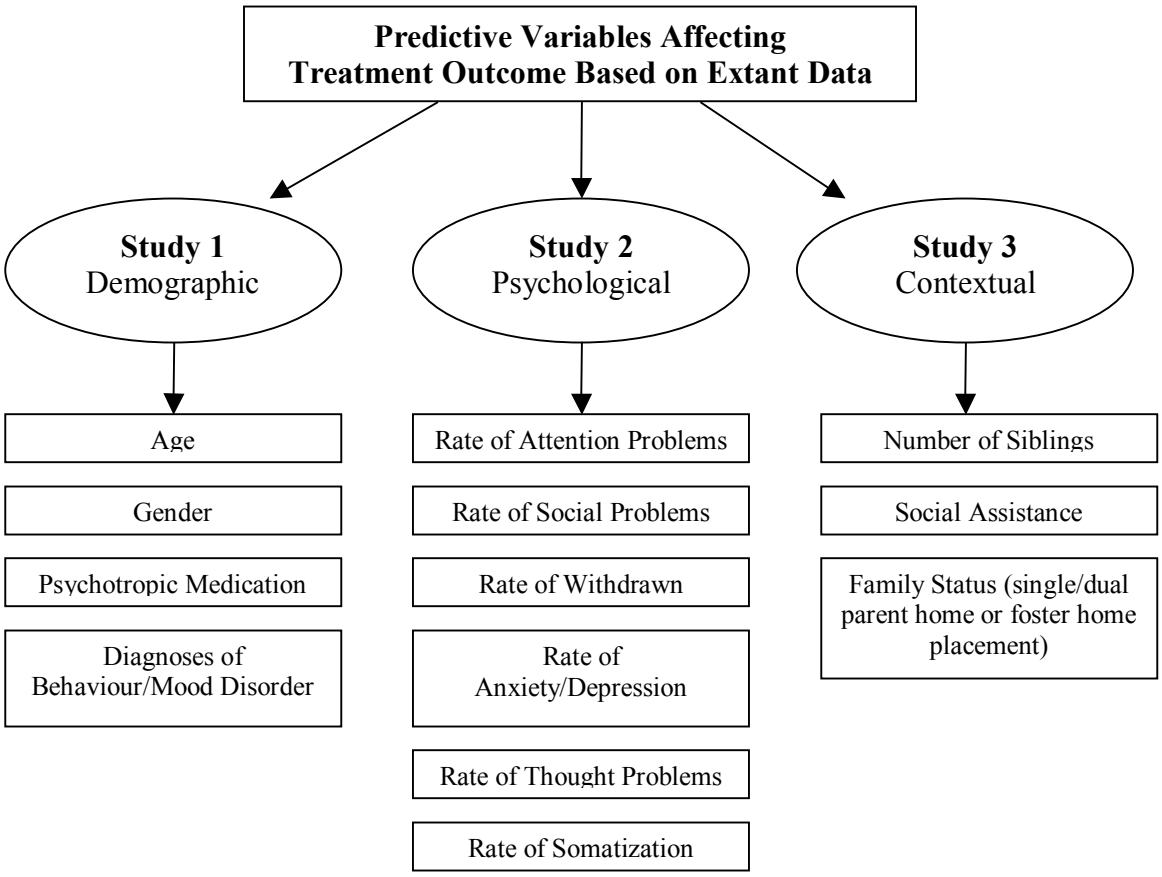
Figure A Predictive Factors Based on Existing Literature



For the purposes of the current work, an investigation into three primary variables will occur, including child demographic, child psychological, and family demographic. A notable limitation of these studies exists in the variables that can be examined. All three studies are constrained by the extant data base available, based on the participant data gathered. Thus, it is only possible to conduct an analysis of those variables for which there is data available. The following table illustrates which variables from the literature

are available for analysis based on the existing data set of the Early Skills Development Program. Definitions for psychological variables can be found in Appendix A.

Figure B Predictive Variables Based on Extant Data



As the diagram illustrates, the current work is divided into a series of three studies that will investigate three primary variables that may provide insight as to which variables will be predictive of greater success for the children in the Early Skills Development Program. Study one describes the development and use of the Early Skills Development Program in detail, previous research on the treatment of aggressive behaviour, and the previous evaluations of the Early Skills Development Program. The objective of study one was to examine whether specific *child demographic variables* of

the child in treatment for aggressive behaviour predicted outcome. Therefore, a review of the literature that assesses the prediction of child demographic characteristics in treatment outcome of aggressive behaviour will occur. The child demographic characteristics that are available for examination based on the extant data from the Early Skills Development Program include gender, age, diagnoses of behaviour and/or mood disorder, and the use of psychotropic medication. Each of these variables and their relationship to aggressive treatment outcome in the Early Skills Development Program will be examined using statistical analysis.

The objective of study two was to examine the *psychological variables* that are specific to the child receiving treatment through the Early Skills Development Program. As such, the review of literature in this section specifically assesses previous research that has attempted to predict treatment outcome of aggressive behaviour in similar early intervention programs based on child psychological variables. Child psychological variables that exist for examination based on the extant data from the Early Skills Development Program include the child's Rate of Withdrawn, Rate of Somatic Complaints, Rate of Anxious/Depressed, Rate of Social Problems, Rate of Thought Problems, and Rate of Attention Problems based on previous data gathered using the Child Behaviour Checklist. Each of these psychological variables and their relationship to aggressive treatment outcome in the Early Skills Development Program will be examined using statistical analysis.

Finally, study three investigated the role of *family demographic variables* in predicting treatment outcome of the child in the Early Skills Development Program. A literature review specific to the family demographic variables that are predictive of the

decline in aggression using similar treatment programs is offered. Family demographic variables that are available based on the extant data base of the Early Skills Development Program include whether the child's caregiver is on social assistance, the number of siblings the child has, and the child's family status- whether the child resides in a single or dual parent home or in foster care. Each of these family demographic variables and their relationship to aggressive treatment outcome in the Early Skills Development Program will be examined using statistical analysis.

STUDY ONE: EXAMINING CHILD DEMOGRAPHIC VARIABLES IN PREDICTING TREATMENT OUTCOME

Literature Review

1.1 Aggression

What is fundamentally clear from a review of the literature is that aggression is a stable behavioural pattern. Moreover, high levels of aggression in children, which if

maintained, can increase risks for later problems, such as substance abuse, criminal activity, psychiatric syndromes, and psychological disorders (Lochman, 1990; Lochman et al., 1989). Research has shown that it is best to intervene as early as possible in the trajectory of antisocial behaviour such as aggression (Golly et al., 2000). Moreover, aggressive children not only cause verbal and physical harm to others but they also have an effect on the education of the children around them (Lochman et al., 1989). For instance, they divert their teachers focus and their classmate's attention away from learning (Lochman et al., 1989). Research from around the world and information gathered from closer within the Saskatchewan community informs us that:

- Non-compliant and aggressive children are likely to grow up as violent and delinquent adolescents.
- Aggressive behaviour, once established, is hard to change.
- Most adult criminals and many young offenders were antisocial and aggressive children.
- Helping conduct disordered youth and young offenders is more expensive and less effective than helping families to deal with non-compliant and aggressive children in the early stages of their development of antisocial behaviour (Child and Youth Services, 2002, p.5).

1.2 Treatment of Aggression

In dealing with childhood aggression, researchers have found two interrelated forms of treatment or intervention that are efficacious: Cognitive Behavioural Therapy and Behavioural Family Therapy. Historically, individual and group psychotherapy have

proven less effective in treating childhood aggression (Lochman, 1990). For instance, while individual therapy may be considered multidimensional, for the most part, the processes use dynamic and person-centered theories to establish rapport and develop self-awareness and empathy such that the child can understand their own "psychodynamic of aggression" (Shechtman, 2000). Once the individual gains this insight into their aggression, clarifying processes are used with cognitive behavioural strategies to help identify methods of behavioural change (Shechtman, 2000).

Cognitive Behavioural Therapy and Behavioural Family Therapy supporters maintain that initial individual psychotherapy is not necessary to have successful, lasting behavioural modification. A multitude of research has yielded empirical evidence that behavioural treatments are effective in reducing aggressive behaviour when administered alone. Research suggests that the two most promising approaches for behavioural modification are Behavioural Family Therapy and Cognitive Behavioural Therapy. While Behavioural Family Therapy and Cognitive Behavioural Therapy are separate forms of treatment, the two treatment strategies share a common goal and that is to "impact on moderating processes in the family or in the child that maintain the aggressive behaviour" (Lochman, 1990, p.48). Behavioural Family Therapy attempts to reduce parents' aversive and controlling behaviour and increase the use of social reinforcement, while Cognitive Behavioural Therapy attempts to reduce cognitive distortions and deficiencies in the child that maintain the aggressive behaviour (Lochman, 1990).

Childhood aggression when clinically significant can affect an individual's cognition producing both distortions and deficiencies (Kendall, 1995). Cognitive Behavioural Therapy focuses on deficient and distorted cognitive processes that are

associated with aggression (Lochman, 1990). This includes, "distortions in their recall and perceptions of others' behaviour and their own behaviour, biases in their attributions about the hostile intentions of others, and over-reliance on nonverbal direct action solutions and under-reliance on verbal assertion solutions as they think of alternative means of responding to social problems" (Lochman, 1990, p.48). Essentially, a child's distortions involve the inability to use all the information he/she is presented with, resulting in a "biased recall of hostile cues" (Kendall & Panichelli-Mindel, 1995, p. 111). For instance, in ambiguous situations, aggressive children tend to see other's behaviour as hostile, resulting in an aggressive action towards the hostility.

Researchers have also found that many children with clinically significant aggression have cognitive deficiencies. Deficiencies include inadequate problem solving skills and quick 'action oriented' solutions to problems (Kendall & Panichelli-Mindel, 1995). For example, they have difficulty creating alternative solutions so they rely on ineffective hostile responses. Cognitive Behavioural Therapy addresses both distortions and deficiencies. Problem solving skills training as well as anger coping problems, modeling, social perspective taking exercises, and role-playing have been found very effective forms of Cognitive Behavioural Therapy treatment. By way of illustration, in treatment "children are taught to self-monitor and observe situations in which they or others become angry, recognize how they react, and acknowledge what it feels like to be angered" (Kendall & Panichelli-Mindel, 1995, p.112).

Cognitive Behavioural Therapy includes a variety of techniques, or combinations thereof, including training in self instructions, problem solving skills training (PSST), perspective taking, imagery, and relaxation. All techniques are used with the intent of

changing children's cognitions during frustrating or provoking situations (Lochman, 1990).

Cognitive Behavioural Therapy targets both "cognitive (attributions of intentionality and strategies of interpersonal conflict-resolution) and physiological (identification and labelling of emotional-arousal cues) components of anger" (Sukhodolsky et al., 2000, p.161). Techniques used may include affective education (i.e., identifying emotions and monitoring anger arousal), development of cognitive skills (i.e., self-instruction and consequential thinking), and enactive procedures (i.e., modeling and role-playing) (Sukhodolsky et al.). Multiple research studies have replicated the finding that utilizing Cognitive Behavioural Therapy and Behavioural Family Therapy on childhood aggression is very effective (Lochman, 1990); however, a limitation may exist when using Cognitive Behavioural Therapy on younger children. For instance, results of Sukhodolsky et al.'s study indicate that school based, group, Cognitive Behavioural Therapy for anger-control was more effective than the structured play used with the control group (Sukhodolsky et al.). While evidence suggests the treatment group showed higher rates of trying to control their expression of anger, "the decrease in the behavioural component of anger is not directly related to the change in the phenomenological elements of anger" (Sukhodolsky et al. 2000, p.167). The authors suggest that developmental level may contribute to cognitive techniques being less effective than behavioural therapy with younger children (Sukhodolsky et al.). As well, overall, children may respond differently to the different techniques and this interaction ought to be investigated further (Sukhodolsky et al.).

A variety of programs have been developed that incorporate the theories that underlie Cognitive Behavioural Therapy and Behavioural Family Therapy. For instance, a program, "Think Aloud", was designed to specifically increase self-control in aggressive 6 to 8 year old boys (Camp et al., 1977). The authors state that "impulsivity and difficulty maintaining sustained response inhibition" (Camp et al., p.158) are characteristics that have been shown to contribute to poor achievement and aggressive behaviour. Camp et al. also cite previous research that has shown a decrease in these characteristics through training in verbalization of problem-solving strategies. Results indicate a significant improvement in prosocial behaviour, as well as changes in performance on a battery of cognitive tests (Camp et al.). Interestingly, while significant improvements were found in prosocial behaviour, there were no significant differences found in actual aggressive behaviour (Camp et al.).

Additionally, an Anger Coping program has been developed based on the same theoretical underpinnings. Lochman et al. (1989) compared the results of two Anger Coping interventions. Both interventions were based on cognitive behavioural and social problems solving training (Lochman et al.). The Anger Coping program has been developed based on these techniques and is uniquely incorporated into the school setting (Lochman et al.). The Anger Coping program is founded on a social-cognitive model of anger arousal, which is well established in the literature (Lochman et al.). While this type of intervention has been found effective, not all children improve (Lochman et al.).

Lack of generalizability has prompted recent research to begin examining the predictors that affect the success of these interventions. Lochman et al. (1989) examined the addition of a teacher-based behaviour management to determine if it would increase

generalizability. In this study, Lochman et al. compared two treatment conditions: the Anger Coping condition (AC) and the Anger Coping plus Teacher Consultation (ACTC). Results indicate that the AC program improved 'disruptive-aggressive off-task' behaviour; however, the ACTC program did not improve these effects (Lochman et al., 1989). Lochman et al. concluded, first, that adding this component might not be very cost-effective, and second, that this may be due to two factors: teacher interventions may simply be replicating the effect for the AC and/or teachers may not be implementing the prescribed techniques (Lochman et al.).

Additional predictors or variables that may affect success include family and child characteristics, such as social and family setting (Lochman, 1990). Treatment characteristics, such as treatment format, therapist behaviour, and knowledge of social learning principles can also affect a child's degree of behavioural change (Lochman). For instance, researchers have found that poorer outcomes occur in lower income families, smaller family size, and lower educational attainment of mothers and fathers (Lochman). Marital status, parental psychopathology, and source of referral have been found as family related predictors (Lochman). Children whose aggression is more widespread or cross-situational are less amenable to behavioural change (Lochman). Finally, treatment characteristics, whether single treatment or treatment combinations, can affect the degree of behavioural change (Lochman).

Not all interventions for aggressive children are strictly based on Cognitive Behavioural Therapy and Behavioural Family Therapy, although similar theories can be found to underlie the programs. For instance, the "First Step to Success" intervention has been used in preventing the development of antisocial behaviours like aggression

(Walker et al., 1998). The First Step to Success program is based on a comprehensive approach employed at school entry and involves all parties (i.e., the child, peers, parents, and teachers (Walker et al.). This intervention involves three components: (1) a proactive screening system used to detect at-risk children, (2) school intervention that includes teaching adaptive patterns of behaviour meant to improve the children's relationships with their peers and teacher and to improve academics, and (3) parent training (Walker et al.).

Like those investigating predictors of success in Cognitive Behavioural Therapy and Behavioural Family Therapy, various researchers have reviewed risk factors that are associated with antisocial behaviour and how this affects early intervention approaches like the "First Step to Success" (Walker et al., 1998; Golly et al, 2000). For instance, Golly et al. examined the effects of the First Step to Success program on two sets of five-year-old twins. Monozygotic twins were used to exclude any genetic factors that could have contributed to variations (Golly et al.). Results indicate a significant improvement in classroom behaviour after the school component was introduced (Golly et al.). While home-based intervention effects were not available due to participant dropout, the authors propose that the improvement from the school intervention was so great that it would have been difficult to assess anyway (Golly et al.).

The Metropolitan Area Child Study Research Group (2002) has also investigated an intervention program for aggressive children. The study implemented the intervention in inner city and urban-poor communities and with early and late elementary school children. Three treatments groups existed: (1) general enhancement classroom program, (2) general enhancement classroom program plus small-group peer-skills training, and (3)

general enhancement classroom program plus small-group peer-skills training plus family intervention. Results indicate that early grade combined with comprehensive interventions is most effective (Metropolitan Area Child Study Research Group, 2002). However, negative effects can occur when intervention is implemented with children who are in later development and live in distressed communities (Metropolitan Area Child Study Research Group, 2002).

Findings of the effectiveness of Cognitive Behavioural Therapy and Behavioural Family Therapy have been found in both the home and the school using parent and teacher ratings. Studies have also documented improvements in the behaviour of siblings of aggressive children following Behavioural Family Therapy parent training (Lochman, 1990). Importantly, researchers have found that parents report a high level of satisfaction with the program proving its social validity and likelihood of future adherence to the newly learned skills (Lochman, 1990).

1.3 Early Skills Development Program

As previous research has stipulated, much can be gained with aggressive children using a Cognitive Behavioural and/or Behavioural Family Therapy approach in reducing aggressive and antisocial violent tendencies in children. The Early Skills Development Program is based on a foundation of Cognitive Behavioural Therapy and Behavioural Family Therapy. This program has been implemented in North Battleford and Saskatoon schools with funding from Saskatchewan Health as an early intervention initiative available for severely aggressive children in Kindergarten and Grade One.

1.3.1 *Program Background*.

Saskatchewan Health has provided funding to Saskatoon and North Battleford District Health Boards to establish a school and home-

based program for very aggressive kindergarten and grade one children. The purpose of the Early Skills Development Program is to "help kindergarten children with persistent aggressive or violent behaviours to develop more socially acceptable interaction styles so that they are less at risk for social rejection and/or neglect" (Child and Youth Services, 2002, p.5). The program is based on the North Battleford Day Treatment Program, a Cognitive-Behavioural treatment program, which has taught specific behaviour skills to young children. The Early Skills Development Program resulted because of an awareness that both schools and mental health services were struggling with an increasing number of aggressive children.

> In 1996, in Saskatchewan, approximately three per cent of kindergarten children were reported to have severe behaviour, social, and emotional problems. One half of these children displayed persistent aggression and violent behaviour and many came from chaotic and/or violent homes (Child and Youth Services, 2002, p.5).

1.3.2 *Program Objectives.* The Early Skills Development Program is based on a set of program principles, goals, and objectives. The programs' objectives encompass the needs of the child, parent, family, and teachers whom are all active participants in the program. Program objectives include:

- To decrease the child's persistent aggressive or violent behaviours
- At all times, to keep the individual needs of the child as a primary concern.
- To increase the child's developmentally appropriate expression of feelings, especially those underlying aggressive or violent behaviours.

- To provide the child with socially acceptable ways to respond to difficult situations.

- To enhance parents' and teachers' skills in dealing effectively with aggressive or violent behaviours.

- To assist the home and school environments in maintaining the child's improved behaviours.

- To increase the child's socially acceptable behaviours.

(Child and Youth Services, 2002, p.7)

1.3.3 *Referral and Assessment.* A child may be referred to the program if he/she is between the ages of four and six and is displaying aggressive behaviour in at least two settings (i.e., home and school). As well, a child's family must be willing to participate in the Early Skills Development Program throughout the weekly visits with the program trainer and attendance at the parent group. The child is referred to the Early Skills Development Program by his/her school teacher or from Child and Youth Services staff who are in partnership with the education system. In addition to the child's aggressive behaviour, he/she may also display characteristics including: attention deficit hyperactivity disorder, a family with child protection concerns, and/or a family with alcohol and/or drug abuse. Once referred, a child must go through a process whereby program facilitators determine whether the child is suitable for the program. To be accepted into the program, a child must not only be regarded as aggressive but also score in the "at-risk" range or higher on the Aggressive Behaviour Scale and/or Delinquent Behaviour Scale of the Teacher Report Form on the Achenbach Child Behaviour Checklist (Achenbach & Edlebrock, 1983); attend one of the schools where

administration and teachers are able to fully participate in and support the program; and, have a parent(s) who supports the program and is willing to participate.

1.3.4 *Program Description.* The Early Skills Development Program has six components that involve participation from the child, parent, family, teacher, and program trainer over a ten week period.

1. Individual day treatment delivered by a paraprofessional aide to one student, usually in a separate room within the school fifteen minutes twice a week;

2. Group day treatment delivered by a teacher (usually a special education teacher) with the assistance of a paraprofessional aide in a separate room within the school to five students with challenging behaviours for 40 minutes twice a week;

3. A classroom component delivered by the classroom teacher for 20 minutes once a week. In addition, the paraprofessional aide works with the Kindergarten or Grade One teacher and students in the classroom during the day to facilitate the acquisition and transfer of social and problem solving skills in identified children;

4. A parents' participation group delivered by the paraprofessional aide in a school for seven sessions of one hour each;

5. The paraprofessional aide then provides an additional 13 sessions of one hour each in the home assisting parents in promoting social and problem solving skills in the child; and

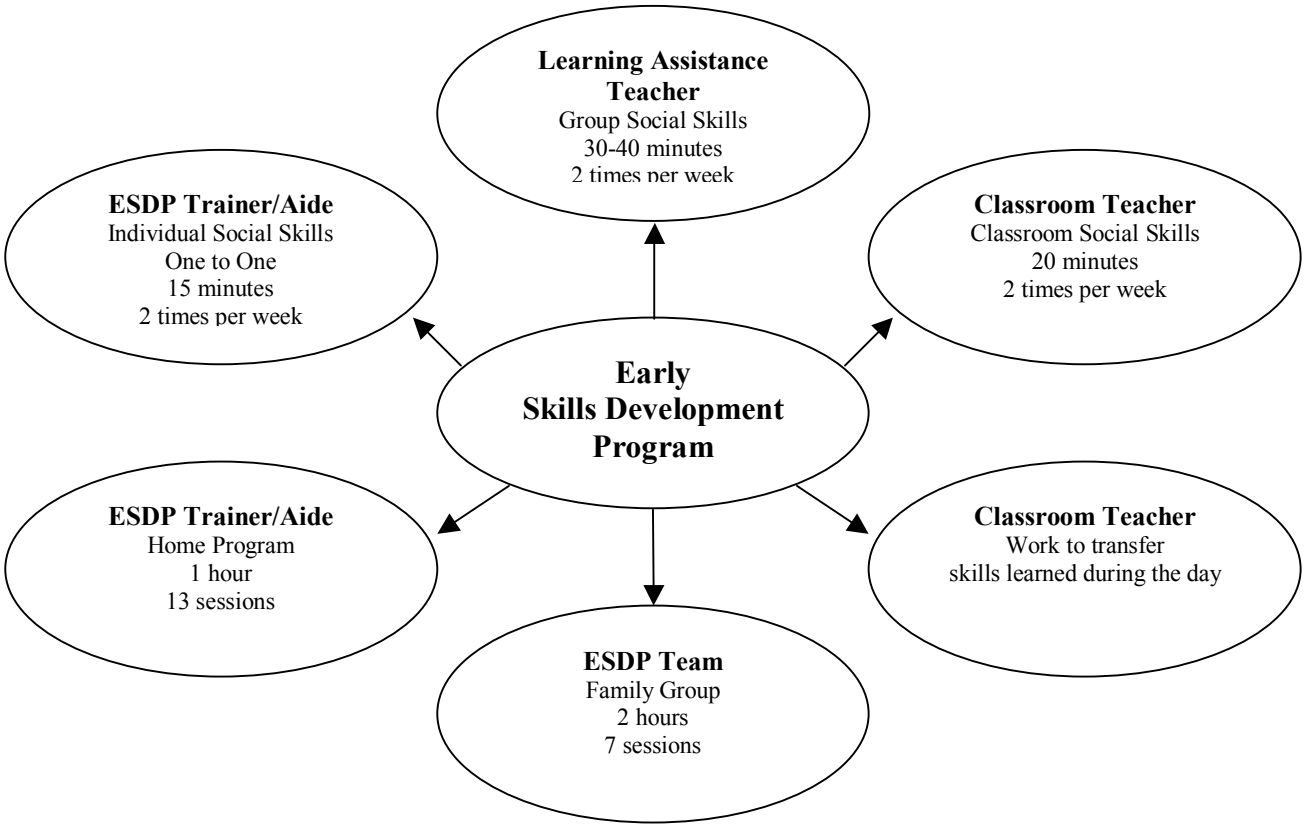
6. A group day treatment delivered by a mental health professional, preferably in the school, to three students with persistent and severe aggressive or violent behaviours for one hour twice a week. For children with more challenging behaviours, the in-home support for parents provided by the paraprofessional aide is doubled from once to twice a week (Leibel, 2002, p.69).

The Early Skills Development Program encompasses a number of social skills that are taught to the child throughout the programs duration. These include: Survival Skills (e.g., ignoring distractions, accepting consequences, using self-control, listening), Relationship Skills (e.g., asking to talk, trying when it's hard), Aggression Skills (e.g., avoiding trouble, managing feelings of anger), and Cognitive-Behavioural Skills (e.g., goals of misbehaviour, problem solving) (Child and Youth Services, 2002). Figure 1.1 is a model of the service delivery system for the Early Skills Development Program.

The fundamental goal of the Early Skills Development Program is for the child to learn appropriate social skills that will be transferred to the classroom, the home, and all aspects of their daily life (Child and Youth Services, 2002). This goal is accomplished by continuing positive reinforcement of the skills. For instance, transfer sheets are used to monitor the use of the skills in the classroom. At the end of a group session, the child is given a transfer sheet for the classroom teacher to record whether the child uses the skills taught to him in the classroom. Positive verbal and material reinforcement is used to support the child's newly learned skills. For instance, children are able to "buy" material rewards at a "school store" using the tokens they have earned in the program.

Figure 1.1 Service Delivery System

Source: Child and Youth Services (2002)



1.3.5 *Participant Data.* Data is collected on each child who participates in the Early Skills Development Program. For instance, evaluation of the child's aggressive behaviour pre- and post-intervention is measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist. The Child Behaviour Checklist-Teacher Report Form was developed by Achenbach (1983) and is a rating scale that is intended to obtain information regarding problem behaviour syndromes. The Teacher Report Form is used at the beginning of the Early Skills Development Program to evaluate if participants are to be accepted into the program, as well as to evaluate the participants' behaviour across several intervals succeeding the program.

Evaluation is conducted by comparing pre- and post-test teacher ratings of the child on the Aggressive and/or Delinquent Behaviour Rating Scales. In addition to establishing treatment effectiveness with aggressive behaviour ratings on the Aggressive Behaviour and/or Delinquent Behaviour Rating Scale, the Teacher Report Form also provides scales for adaptive behaviour and school performance. Therefore, information about each child on eight additional clinical scales is gathered: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, and Aggressive Behaviour.

In addition to the Teacher Report Form of the Child Behaviour Checklist, facilitators of the program collect demographic data about each child, including the child's age, grade, sex, diagnosis of a behaviour and/or mood disorder, medication status, number of siblings, family status, guardianship status, and whether family is on social assistance. See Appendix B for a copy of the Client Data that is gathered on each child including ratings from the Teacher Report Form, as well as demographic information.

1.4 Evaluations of Early Skills Development Program

To date, evaluations of the efficacy of the Early Skills Development Program has been conducted at year one, year two, and year three since the program's commencement. The first treatment evaluation of the Early Skills Development Program was conducted by Mykota (1999) who found a significant positive effect on the aggressive behaviour of the targeted children. The evaluation was conducted using participants from both Saskatoon and North Battleford schools. Pre and post-treatment data was gathered using the Teacher Report Form of the Child Behaviour Checklist. In addition to Mykota's finding that the Early Skills Development Program was efficacious, he also found that the

effectiveness of the program remained stable over time, at least two and four months after intervention.

Mykota (1999) reported that the parent and teacher questionnaires support his quantitative findings and indicate the effects appear due to intervention practices that include: "listening skills instruction; raising the child's awareness of problem behaviours; providing the child with more appropriate, socially acceptable ways of responding; and continuing to provide parent meetings" (p.16). Mykota also notes that despite slight variations between North Battleford and Saskatoon district schools delivery of the program, there remains a positive treatment effect for the total sample. Mykota concluded that after one year, "the Early Skills Development Program has proved to be an effective method for the treatment and amelioration of aggressive or violent behaviour in Kindergarten and Grade one children" (p.16).

The second evaluation, by Headley (2000), examined the Early Skills Development Program both quantitatively and qualitatively using both pre- and post-test intervention ratings of the Teacher Report Form of the Child Behaviour Checklist and responses to parent and teacher opinion inventories, respectively. Again, data was collected from students in the seven schools in North Battleford and six schools in Saskatoon from September 1997 to June 1999. On pre- and post-test evaluations, Headley examined the effectiveness of the program as a function of performance on four scales of the Child Behaviour Checklist: Aggressive Behaviour, Delinquent Behaviour, Social Problems, and Attention Problems and found statistically significant differences between pre- and post-test means that suggest, quantitatively, the effectiveness of the program (t_{53}= 7.026, $p \leq .001$, t_{53}= 2.286, $p \leq .001$, t_{53}= 3.607, $p \leq .001$, t_{53}= 3.98, $p \leq .001$).

Headley (2000) also evaluated opinion inventories at both sites. Overall, the inventories indicated that the majority of parents and teachers rated positive improvements in children's behaviour as a result of the program. It was found that parents and teachers thought the program had increased prosocial behaviour in both home and school and enhanced the skills of teachers and parents in dealing with aggressive behaviour. Moreover, results from parents who completed the inventories indicated the skills learned could be generalized to the whole family and that there was an improvement seen in their child's academics.

Results from Headley's (2000) study also suggested that the home visits were a useful part of the program. Moreover, the involvement of paraprofessionals in the home fostered feelings in the parents that others really cared about their children. Teachers indicated positive improvements in the children and observed the children to have "better understanding of consequences, more awareness of appropriate behaviour, the development of good skills that enable children to make friends, and the choice of better alternatives to unacceptable behaviour" (Headley, p.98).

Overall, positive effects of the Early Skills Development Program that were evidenced from pre- to post-test treatment include: decreasing the use of violent and aggressive behaviours, increasing use and repertoire of socially acceptable behaviours, increasing awareness of current behaviour problems and enabling the children to understand that behaviour is a choice, enhancing parent and teacher skills and confidence in dealing effectively with these children and how to maintain improvements, and improving relationships, involvement, and understanding between home and school (Headley, 2000).

Similar to the previous two evaluations of the Early Skills Development Program, Leibel (2002) examined whether the cognitive behavioural and behavioural family treatment provided by the program was effective in decreasing children's aggressive behaviour at school, as well as whether the program was successful in continuing to decrease the levels of aggression in children across the three years the program had been operating. Leibel's study determined "there were decreases in children's aggressive and/or violent behaviour as a function of participating in the Early Skills Development Program, which over a three-year period lead to a decrease in negative behaviour in school" (p.81). In addition, the targeted children's behaviour showed stability after the program ended neither decreasing further nor increasing back to pre-treatment levels.

Interestingly, while Leibel (2002) found statistically significant deceases in aggression, many children remained in the at-risk range on the Teacher Report Form of the Child Behaviour Checklist. Leibel suggested that these findings imply that the program is not sufficiently effective to expect "that these children are relieved of their tendency to exhibit behaviour problems or strong enough to suggest that these children will not later develop Conduct Disorder or even antisocial personality patterns as they approach adulthood" (p. 91). Closer examination of individual children who participated showed a small group of participants who had a more significant decrease in aggressive behaviour (e.g., initial T-scores found in the clinical range: 70, 68, 74, and 90 decreased to normal: 53, 51, 52, and 62). The finding of some children showing greater improvement over others suggests the need for examination of the predictive variables that affect various treatment outcomes.

1.5 Child Demographic Variables Affecting Treatment Outcome

As evidenced by the preceding discussion, numerous studies have shown cognitive behavioural therapy and behavioural family therapy to be effective in treatment of aggressive antisocial behaviour for children and adolescents. What is less well documented is evidence that substantiates or identifies child, parent, family, and contextual variables that may influence or predict treatment outcome. It is well understood throughout the discipline of psychological treatment that even the most effective treatments are likely to be ineffective for even a small number of children. As such, it is important to understand not only if a particular treatment is effective overall but why and with whom is it most effective. Results from predictive studies will direct clinicians and practitioners toward providing treatment to those who will most benefit, finding alternative therapy for those clients who need something different, or possibly supplementing existing treatments for those who need something more, all in order to improve overall treatment effectiveness. As Kazdin and Wassell (1999) suggested:

> The effectiveness of treatment will not only depend on identifying empirically supported interventions, but also on directing cases to available treatments from which they are likely to profit. Further study of predictors of therapeutic change…can serve to optimize the match between interventions and families and as a result provide informed clinical care (p.170).

What follows is a discussion of the literature that specifically examines *child demographic variables* that may be predictive of treatment in aggressive children. Extensive literature exists that examines predictive variables in psychiatric treatment. For example, Pfeiffer and Strzelecki (1990) conducted a review of predictor variables for

children and adolescents in residential psychiatric treatment. Their review suggested that of the 34 articles evaluated, ten predictor variables were found including: intelligence, organicity (central nervous system or CNS dysfunction), diagnosis, symptom pattern, age at admission, gender, family functioning, treatment, length of stay, and aftercare/post-discharge environment. Pfeiffer and Strzelecki's review found that with more comorbid diagnoses there was a poorer treatment outcome. Conversely, while some variables showed a negative relationship with outcome, other variables showed a positive relationship, as was the case with length of stay in the residential psychiatric treatment, such that the longer the stay, the more positive the outcome was found. However, with a few variables more specific to the child's demographic status, less of a correlation existed with the outcome suggesting little relationship as was the case with age at admission and gender.

While numerous studies and reviews can be found investigating the relationships of predictive variables in psychotherapeutic psychiatric treatment, less research has been completed examining the specific predictor variables in cognitive-behavioural and behavioural family treatment with aggressive children. However, much information can be obtained from the literature that does exist. As was previously discussed, to a large extent the treatment used with aggressive children has been Cognitive Behavioural Therapy, Behavioural Family Therapy, or a combination of the two. Similarly, research on the predictive factors of treatment outcome focuses on treatment used with the child or adolescent directly or through parent training therapy whereby the parent(s) participates in behavioural family therapy and learns cognitive behaviour modification skills for treating his/her aggressive child.

Ansari, Gouthro, Ahmad, and Steele (1996) examined the effects of a behavioural modification program in an inpatient treatment facility with adolescents with conduct problems. Adolescents in this study displayed a variety of conduct problems including truancy, aggression, and promiscuity. The behavioural modification program used both positive and punitive consequences. The average length of the program was three months with at least eight weeks to be involved in the study. Some of the predictive factors Ansari et al. examined included age, gender, diagnoses, and length of stay. The most positive treatment outcomes were found for females and non-conduct disordered patients. If the patient was conduct disordered, then more success was found when there was an extended length of stay (past 24 weeks), although length of stay and age were not found to be significantly correlated with positive outcome.

Frankel, Myatt, Cantwell, and Feinberg (1997) examined what variables would predict transference of skills to school using a cognitive behavioural social skills training program in a treatment facility. Frankel, Myatt, and Cantwell (1995) in an earlier study determined that this social skills training program significantly decreased ratings of aggression and withdrawal compared to a control group. Results from Frankel et al. (1997) indicated that children who had not been diagnosed as having oppositional defiant disorder were more likely to respond positively.

Phillips, Schwean, and Saklofske (1997) found similar results to Frankel et al (1997) when they examined students from Saskatchewan schools who participated in the Day Treatment Program, a cognitive-behaviour based treatment for aggressive children that is one part of the Early Skills Development Program. The Day Treatment Program was originally implemented on its own before additional cognitive and parent training

components transformed it into the Early Skills Development Program. Teachers referred children who had been pre-tested using the Child Behaviour Checklist. Children were selected based on scores that exceeded a clinical cut-off (i.e., T score of 70 or higher) on at least one of the Externalizing Composite subtest including Inattentive, Aggressive, and Delinquent, which are all highly correlated and related to child conduct disorders. Post-test data was gathered when the same teacher completed the Child Behavioural Checklist at the end of the program. Participants were mostly aged 11 years and under and male. The program was implemented by teachers and overseen and developed by staff at a Regional Mental Health Centre. Sessions focused on cognitive and social skills and reinforced with a token economy system. Overall, Phillips et al. found that the Day Treatment Program was a successful method of reducing aggressive behaviour in children, particularly unpopular children who may have had greater motivation to change. Popular aggressive children, unlike their counter parts, often use aggression proactively (not reactively) and are rewarded continuously by positive reinforcement of praise and privileges according to Phillips et al. Phillips et al. concluded that the popular children of the program appeared to be less "responsive to or accepting of vales and ideas inherent in these programs" (p.62).

To further investigate these findings, Phillips, Schwean, and Saklofske (Draft Copy) examined the same participants from the Day Treatment Program to investigate more extensively demographic factors and behavioural indicators that might predict clinical treatment outcome. Demographic factors that Phillips et al. examined included child age, grade, race, school locale, and expertise of the teacher delivering the program, while behavioural indicators included the subtests/composites of the Child Behaviour

Checklist. Phillips et al. confirmed their previous study, with results indicating that the aggressive and socially withdrawn child (i.e., unpopular) is the one who most benefits from the Day Treatment Program. "Both the existing literature and the data from this study paint a picture of the rejected child as unhappy, without friends, and the target of a variety of aversive social sanctions form both peers and authorities" (Phillips et al. Draft Copy, p.7). As such, this study confirms the authors' previous assumptions that the unpopular child who uses aggression reactively (as opposed to proactively for personal gain and status) most benefits from the program. The authors explain why the unpopular child may predict more positive treatment outcome:

> A lonely, unhappy child therefore may view programs such as this as a lifeline to something better. This may explain why programs which are built upon reinforcements and social praise succeed when school and social models of punishment fail. These children are already unhappy and miserable, we only add to their burden by punishing them further for their disabilities (Phillips et al. Draft Copy, p.7)

Conversely, this theory also suggests that an opposing program/paradigm must exist for the popular aggressive child who uses aggression to gain status and dominate others. This form of aggression, sometimes viewed positively by others (e.g., in sports such as hockey) and sometimes negatively (e.g., bullying) is in many ways the child's "source of influence and power" (Phillips, Schwean, & Saklofske, 1997, p.66). Attempting to reward a child for non-aggressive behaviour when their own aggression is already being rewarded would be futile (Phillips et al. Draft Copy). Therefore, the motivation behind the misbehaviour must be closely linked with the modification of

misbehaviour. This is already a tenet of the Day treatment Program; however, with the current research, more direct action may be taken to ensure the implementation of it.

Kazdin and Crowley (1997) examined client characteristics in predicting treatment outcome by investigating the effects of age, cognitive functioning and reasoning abilities, academic difficulties and achievement, and gender in children and adolescents in a cognitive behavioural program. Kazdin and Crowley proposed that older children were more likely to respond positively to cognitive-behavioural therapy because of the higher levels of cognitive functioning and reasoning abilities required. Older children may respond better to cognitive behavioural interventions as well because they include children with later onset (less severe and less stable symptoms) of conduct problems. Differences between sexes may be noted as well as an interactional effect between gender and age since females tend to have a later onset. "Many of the abilities utilized in cognitive based treatment, such as perspective taking, empathy, and attention to contextual variables in social situations, are more evident in girls than in boys, as part of normal development" (Kazdin & Crowley, 1997, p. 187). If cognitive behavioural therapy is more effective in older children, it may be a result, in part, of the greater percentage of girls in that group. Results from Kazdin and Crowley's (1997) study indicate predictor variables which had a negative correlation with positive treatment outcome to be academic dysfunction (school delays, failing) and more symptoms at intake across a range of disorders. Symptoms on the DSM-IIIR diagnoses include conduct disorder, oppositional defiant disorder, attention deficit hyperactivity disorder, anxiety, and depression. Findings also reveal IQ as a predictive variable when interacted

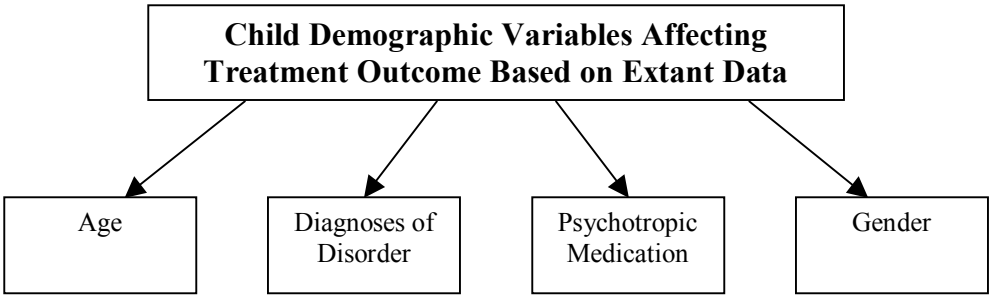
with gender, such that girls with higher IQ predicted a positive treatment outcome. Age was also a predictive factor in treatment outcome, where older children performed better.

1.6 Summary

Initial research has shown efficacy of Cognitive Behavioural Therapy and Behavioural Family Therapy with aggression. However, results are mixed indicating the need for more refined research questions that concern the characteristics of children like demographic factors, including age, gender, and diagnoses of a disorder. It is important to identify factors that predict successful treatment outcome to enhance understanding of how a treatment operates, as well as which children are most likely to benefit and which would be better served by alternative treatments. The preceding discussion outlined much of the existing literature on child demographic predictive variables that affect treatment outcome in aggressive children using cognitive behavioural therapy, behavioural family therapy, or a combination of both.

For the purposes of the current study, an investigation of child demographic variables will occur. A notable limitation of this study exists with the variables that can be examined. This study is constrained by the extant data base available, based on the participant data gathered. Thus, it is only possible to conduct an analysis of those variables for which there is data available. The following table illustrates which child demographic variables from the literature are available for analysis based on the existing data set of the Early Skills Development Program.

Figure 1.1 Child Demographic Variables



1.7 Research Statement

The objective of this research study is to determine what child demographic variables will predict treatment outcome in the Early Skills Development Program, an early intervention program that uses cognitive behavioural therapy and behavioural family therapy to decrease aggression in young school aged children. These variables, such as gender or age, are called predictor variables. This will be examined through an analysis of the Early Skills Development Program. Based on previous research and extant data available from the Early Skills Development Program, the general research hypothesis in this study is:

Certain variables will predict behaviour change on the Aggressive Behaviour Scale of the Teacher Report Form on the Achenbach Child Behaviour Checklist immediately following treatment in children who have received treatment in the Early Skills Development Program.

The following questions will be examined specifically:

1. Previous research demonstrates that more positive treatment outcomes were found for female children in a behavioural modification program (Ansari et al., 1996, Kazdin & Crowley, 1997). Therefore, will *gender* predict behaviour change on

the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

2. Research suggests that older children respond more positively to cognitive behavioural treatment than younger children (Kazdin & Crowley, 1997). Thus, will *age* predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

3. While no previous research was found to suggest psychotropic medication is predictive of treatment outcome, previous research has suggested that a child who has a mood or behaviour disorder, in addition to aggressive behaviour, is more likely to have a negative treatment outcome (Kazdin & Crowley, 1997). Therefore, if a child is taking psychotropic medication for the treatment of a mood/behaviour disorder, it is logical to assume that the medication is helping to control the symptoms of that disorder and the child will be more likely to have a positive treatment outcome in the Early Skills Development Program. Thus, will taking *psychotropic medication* predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

4. Research suggests that the more symptoms a child has at intake across a range of disorders can be predictive of negative treatment outcome (Kazdin & Crowley, 1997). These diagnoses include Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder, Anxiety, and Depression. Thus, will a *diagnosis of a behaviour or mood disorder*, such as Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder, Anxiety,

or Depression, predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

Methodology

2.1 Group Selection

Data was collected from students in seven schools in North Battleford and six schools in Saskatoon who had participated in the Early Skills Development Program from September of 1997 in North Battleford and from January 1998 in Saskatoon to June 2003 in both sites. The Early Skills Development Program is a school and home based program for severely aggressive 5 to 6 year olds. The program is based specifically on cognitive behavioural interventions but includes some behavioural family interventions as well to improve generalizability of treatment behaviour. Students were selected based on their teachers identifying them as presenting with continual aggression or violent behaviours. Teachers were required to complete the Child Behaviour Checklist-Teacher Report Form. Students were eligible for the Early Skills Development Program if their scores from the Teacher Report Form- Aggression Problem Scale and/or Delinquent Behaviour Scale- were equal to or exceeded a cut off T-score of 60.

2.2 Participants

Participants from the Early Skills Development Program ranged in age between four and seven years when they started the program and would currently be between eight and eleven years of age. There were 172 participants available with the majority being male. Data was collected with regard to change in behaviour, rated using the Teacher Report Form, and with regards to demographic information in order to investigate

possible predictor variables. Demographic variables include: (a) the child's age, (b) gender, (c) diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), and (d) whether the child is on psychotropic medication.

2.3 Instrumentation

Evaluation of participants' aggressive behaviour pre- and post-intervention was measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist. Research findings support the use of teacher rating scales as both valid and reliable measures for the assessment of psychological and behavioural problems (Sattler, 1992). This is thought to be a result of the standardized environment teachers work in and the variety of students to whom they can compare a students' school performance, adaptive functioning, and problem behaviour (Sattler, 1992).

The Teacher Report Form was used at the beginning of the Early Skills Development Program to evaluate if participants would be accepted into the program. The Teacher Report Form was subsequently used to evaluate the participants' behaviour at the conclusion of the ten-week program and across several intervals succeeding the program up until approximately two or three years post the first evaluation. Only pre-test and post-test data that was taken immediately prior to and immediately following intervention will be utilized in the analysis of the data to determine if particular child demographic variables are useful in the prediction of treatment outcome. Since it is not the goal of this study to examine generalizability, it is beyond the scope of the analysis to examine the follow-up evaluations that have been conducted with each participant at subsequent intervals following treatment.

The Child Behaviour Checklist-Teacher Report Form was developed by Achenbach (1983) and is a rating scale that is intended to obtain information regarding problem behaviour syndromes. The Teacher Report Form also provides scales for adaptive behaviour and school performance. The Teacher Report Form has 113 items. Eight clinical scales are provided: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, and Aggressive Behaviour.

2.4 Procedure

Participants of the Early Skills Development Program were identified, by teachers, as presenting with severe and continuous aggressive behaviour. Teachers rated the children on the Teacher Report Form in order to determine the participant's eligibility for the program (see Appendix C). If the child scored a T-score of 60 or higher on the Aggressive and/or Delinquent Behaviour Scale, they were admitted into the program. While the treatment outcome can be evaluated using pre- and post-test data from either the Aggressive and/or Delinquent Behaviour Scale, for the purposes of this study, the pre- and post-test data from the Aggressive Behaviour Scale was selected. This was based on the finding that 97.1% of participants in the program could have been admitted based on their T-score of 60 or higher on the Aggressive Behaviour Scale.

Teachers were required to rate children's behaviour on a Likert scale ranging from 0 (not true), score of 1 (somewhat or sometimes true), to score of 2 (very or often true). Statements the teachers were required to rate included: "Destroys property belonging to others" and "Gets into many fights". Additionally, facilitators from the program gathered demographic data from each participant including, the child's age,

gender, diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), and whether the child was on psychotropic medication. Additional demographic data not relevant to this particular study was also gathered, including: number of siblings, family status (dual or single parent, or foster placement), and whether the family was on social assistance.

After permission was gained from parents, children went through a ten week cognitive behaviour skills training. The parents were also involved in a parent training component. The ten-week cognitive behaviour skills training program is called the Early Skills Development Program. The Early Skills Development Program was described previously and therefore will not be repeated. Readers are referred to section 1.3 for more information. At the end of the ten weeks, teachers were required to complete a Teacher Report Form.

2.5 Data Analysis

The following child demographic variables were examined to determine their predictive validity in the treatment outcome of the Early Skills Development Program: age, gender, psychotropic medication status, and diagnoses of a behaviour and/or mood disorder. To ascertain if these variables were predictive of treatment outcome, a series of steps was required for statistical analysis. The analysis of the present study involved the calculation of frequencies, means, standard deviations, standard error of the mean, equality of variances, independent sample t-tests, correlations, and multiple regression. Statistical analyses of the data were computed using the SPSS computer program.

First, treatment outcome was determined for each participant in the Early Skills Development Program through the teacher ratings on the Child Behaviour Checklist-Teacher Report Form using the pre- and post-test scores of the Aggressive Behaviour Rating Scale. Specifically, the variable "treatment outcome" was created by subtracting pre-test from post-test scores. Treatment outcome is the dependent/criterion variable or the difference between pre- and post-test evaluations on the Aggressive Behaviour Rating Scale of the Teacher Report Form of the Child Behaviour Checklist. The independent/predictor variables included the child demographic variables.

Treatment outcome was used in computing an independent sample t-test to determine whether the difference in treatment outcome for each variable was significant. An independent sample t-test was first employed because the demographic variables (i.e., gender- male and female) are independent samples being compared based on the treatment outcome to determine if there is a significant difference between the mean scores for the two groups. A significant difference would suggest the possibility of one group being a better predictor over the other. Correlations with all the demographic variables were then computed to determine the bivariate relationship with the treatment outcome variable. Finally, to determine if predictive validity could be increased by combining two or more independent or predictor variables, a multiple regression statistical analysis was computed.

Results

The purpose of this study was to determine whether child demographic variables were predictive of treatment outcome in the Early Skills Development Program, which

used cognitive behavioural treatment for aggressive behaviour in Kindergarten and Grade One children. The results of this study are outlined in this section. The first part outlines the descriptive statistics analyzed including the examination of the quality of the data and the creation of new variables. An in-depth analysis of the proposed predictive variables is then presented including a comparison of means, correlations to determine the bivariate proportion of variance accounted for, and multiple regression to determine if combining more than one variable would increase predictive validity.

3.1 Descriptive Analysis

To begin with, the quality of the data was examined to determine whether each proposed variable was suitable for analysis and to make changes if they were not. Two steps were involved in this: frequency of variables and the creation of new variables. Each variable was examined for their frequency as they existed in the original data. The following table illustrates these frequencies.

Table 3.1 Frequencies Based on Extant Data Base

Variable	Categorical Variable	Frequency	Percentage
Gender	Male	138	80.2
	Female	34	19.8
	Total	172	100.0
	Missing	0	0.0
Age	Four	4	2.3
	Five	121	70.3
	Six	46	26.7
	Seven	1	.6

	Total	172	100.0
	Missing	0	0
Diagnoses	No diagnoses	142	82.6
	ADHD diagnoses prior to program	11	6.4
	Cerebral Palsy	1	.6
	FAS/FAE	2	1.2
	Brain Injury	2	1.2
	Down Syndrome	1	.6
	Delayed Functioning	1	.6
	Romano Syndrome	1	.6
	Global Apraxia	1	.6
	ADHD diagnoses after program	4	2.3
	ADHD/Asperger Comorbid	1	.6
	Total	167	97.1
	Missing	5	2.9
Medication	No medication	157	91.3
	Ritalin	6	3.5
	Vitamins	1	.6
	Risperdal	1	.6
	Total	165	95.9
	Missing	7	4.1

For each variable a dichotomy existed or was assumed. For example, Gender automatically necessitated two dichotomous variables: male and female. With the other three variables, a dichotomy was created for the purposes of analysis. The frequency of each variable assisted with the creation of new variables. For Age, given that the ages four and seven had a small frequency of participants, they were eliminated. This left ages five and six to compare and determine if one was more significant than the other in predicting treatment outcome.

Based on the extant data base, a large number of diagnoses existed within the participants. However, for the purposes of this study only a diagnosis of a behaviour or mood disorder was examined. The remaining medical diagnoses were beyond the scope of this study. Therefore, two new categorical variables were created: No behaviour or mood diagnoses (no diagnoses) and behaviour or mood diagnoses (diagnoses), with the

remaining medical diagnoses being eliminated. Based on the extant data, the diagnoses belonging to behaviour or mood disorder included, Attention Deficit Hyperactivity Disorder (ADHD) diagnoses prior to program treatment, ADHD diagnoses after program treatment, and ADHD coexisting with Aspergers. The extant data did not reveal any participant with a diagnosed mood disorder.

Finally, the study was set to determine whether the use of a psychotropic medication predicted treatment outcome. Based on the existing data, participants were either taking no medication or were taking one of three types of medication, including Ritalin, Vitamins, or Risperdal. For the purposes of this study, only psychotropic medication was examined to determine whether it was predictive of treatment outcome. Therefore, any participant recorded as having taken Vitamins was considered part of the "No medication" group. Even after combining Ritalin with Risperdal to create dichotomous categorical variables of No medication versus Psychotropic medication, an unequal number of participants would be compared (i.e., 158 versus 7, respectively). Therefore, the examination of whether psychotropic medication would be predictive of treatment outcome in the Early Skills Development Program was terminated.

The following table illustrates the creation of the new categorical variables for analysis and their frequencies.

Table 3.2 Frequency of Categorical Variables for Data Analysis

Variable	Categorical Variable	Frequency	Percentage
Gender	Male	138	80.2
	Female	34	19.8
	Total	172	100.0
	Missing	0	0.0

	Excluded	0	0.0
Age	Five	121	70.4
	Six	46	26.7
	Total	167	97.1
	Missing	0	0.0
	Excluded (ages 4,7)	5	2.9
Diagnoses	No diagnoses	151	87.8
	Diagnoses	16	9.3
	Total	167	97.1
	Missing	5	2.9
	Excluded	0	0.0

The final variable to be created was the dependent variable "treatment outcome". Participants were accepted into the Early Skills Development Program based on a T-score of 60 or higher on either the Aggressive or Delinquent Behaviour Scales. Therefore, treatment outcome could be based on the mean difference between pre- and post-test data from either scale. However, by comparing the frequency of participants who were accepted into the program with either the Aggressive Behaviour Scale or the Delinquent Behaviour Scale, a decision was made to use only the Aggressive Behaviour scale pre- and post-test scores in determining treatment outcome. Additionally, the objective of this study was to determine what variables are predictive in the treatment of aggression, not delinquency. Therefore, it was logical to use a treatment outcome that is based on the purest measure of the behaviour. The following tables display the number of the participants accepted to the program based on the Aggressive Behaviour Scale versus the Delinquent Behaviour Scale.

Table 3.3 Participants Accepted Based on Aggressive Behaviour Scale

T- Score	**Frequency**	**Percent**
≥ 60	167	97.1

≤ 59	5	2.9
Total	172	100.0
Missing	0	0.0

Table 3.4 Participants Accepted Based on Delinquent Behaviour Scale

T- Score	Frequency	Percent
≥ 60	146	84.9
≤ 59	26	15.1
Total	172	100.0
Missing	0	0.0

Using the pre- and post-test scores from the Aggressive Behaviour Scale to determine the treatment outcome of each participant targeted the objective of this study by examining the prediction of aggression using the purest measure possible. As well, using the Aggressive Behaviour Scale includes 97.1% of participants in the sample. If one were to use the Delinquent Behaviour Scale only 84.9% of participants would be under investigation. Therefore, it was more rational to use the treatment outcome that includes the greater number of participants.

Using the Aggressive Behaviour Scale, treatment outcome was based on the difference between pre- and post-test data. From the 172 participants a range of differences in treatment outcome was observed. The following table illustrates these differences in treatment outcome and the frequency with which they occur.

Table 3.5 Descriptive Analysis of Treatment Outcome

Treatment Outcome	Frequency	*Percent*
-23	1	*.6*
-20	2	*1.2*
-16	1	*.6*
-15	1	*.6*

-14	1	*.6*
-11	1	*.6*
-10	1	*.6*
-9	1	*.6*
-8	1	*.6*
-7	3	*1.7*
-5	2	*1.2*
-4	2	*1.2*
-2	3	*1.7*
-1	7	*4.1*
0	7	*4.1*
1	3	*1.7*
2	4	*2.3*
3	9	*5.2*
4	7	*4.1*
5	6	*3.5*
6	13	*7.6*
7	9	*5.2*
8	6	*3.5*
9	5	*2.9*
10	7	*4.1*
11	7	*4.1*
12	5	*2.9*
13	6	*3.5*
14	7	*4.1*
15	5	*2.9*
16	1	*.6*
17	7	*4.1*
18	5	*2.9*
19	4	*2.3*
20	6	*3.5*
21	4	*2.3*
22	2	*1.2*
23	1	*.6*
24	1	*.6*
25	2	*1.2*
26	2	*1.2*
27	1	*.6*
28	1	*.6*
31	1	*.6*
39	1	*.6*
Total	*172*	*100.0*

Once the new categorical variables were created and the data was suitable for examination, three different stages of data analysis occurred. The following presents each stage of data analysis.

3.2 Data Analysis

In determining whether the child demographic variables were predictive of treatment outcome in the Early Skills Development Program, three stages were involved in the statistical analysis. A comparison of the means was conducted using an independent samples t-test, which established whether the categorical variables belonging to each variable were statistically significant from each other. Correlations were also computed to examine the bivariate relationship of each of the child demographic variables with treatment outcome. Finally, it was assumed that multiple regression would follow to determine whether combining the categorical variables would generate improved predictive validity of the treatment outcome.

3.2.1 *Comparison of Means*. Each variable was examined using an independent sample t-test. Keeping in mind that psychotropic medication status was eliminated, the remaining three variables were examined- age, gender, and diagnostic status. For each of the three variables under consideration, no significant results were found when they were compared based on treatment outcome. For gender, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of males ($\underline{M}$ = 7.96, $\underline{SD}$ = 10.58) with that of females ($\underline{M}$ = 9.26, $\underline{SD}$ = 7.07). This test was found to be statistically nonsignificant (alpha of .05), indicating no difference between male and female participant's treatment outcome in the Early Skills Development Program. It should be noted that the Levene's Test for Equality of Variances found significant results,

$F = 4.79$, $p < .03$, indicating unequal variances due to a discrepancy in sample sizes. Therefore, caution is required in interpreting the results. It may be possible that given a more equal number of females the difference between the respective treatment outcome mean scores may approach or attain significance as indicated in previous studies.

For the age factor, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of participants age five ($M = 8.62$, $SD = 9.77$) with that of participants age six ($M = 6.76$, $SD = 10.46$). The comparison between ages five and six found statistically nonsignificant results (alpha of .05), indicating no difference in the treatment outcome of children age five and age six, the two most common ages of participants in the Early Skills Development Program. A test for equality of variances between ages five and six indicated statistically nonsignificant results, suggesting that there were equal variances between the two groups.

Finally, for diagnostic status, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of participants without a behaviour disorder ($M = 8.01$, $SD = 9.86$) with that of participants with a behaviour disorder ($M = 9.50$, $SD = 12.26$). This test was found to be statistically nonsignificant (alpha of .05), indicating no difference in treatment outcome between those participants that did not have a diagnoses compared to those that did have a diagnoses (of primarily ADHD). A test for equality of variances between diagnoses and no diagnoses indicated statistically nonsignificant results, suggesting that there were equal variances between the two groups. It should be noted that using an increased alpha of .10 resulted in the same nonsignificant findings for all of the child demographic variables.

3.2.2 Correlations. Given that the categorical variables were not found to be significantly different, it logically followed that one variable would not likely be more valid than the other in predicting treatment outcome. However, by conducting a correlational analysis it was possible to determine the bivariate relationships with treatment outcome. The correlations between the dependent variable, treatment outcome, as measured by the Child Behaviour Checklist-TRF Aggressive Behaviour Scale, and the independent variables, gender, age, and diagnostic status are displayed in Table 3.5.

Table 3.6 Correlations by Variable

	Treat.	**Male**	**Female**	**Age 5**	**Age 6**	**No Diagnose**	**Diagnose**
Treat. [1]	1.000						
Male	-.052	1.000					
Female	.052	-1.000**	1.000				
Age 5	.064	-.130	.130	1.000			
Age 6	-.088	.102	-.102	-.931**	1.000		
No Diagnose	-.044	-.188*	.188*	.068	-.014	1.000	
Diagnose	.044	.188*	-.188*	-.068	.014	-1.000**	1.000

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

[1] Treatment Outcome

By observing the relationships between the categorical variables, it was apparent that none of the variables was significantly correlated to treatment outcome. Therefore, none of the variables would be predictive of treatment outcome. For instance, the strongest correlation to treatment outcome was evidenced by age six, since r = -.088, and r^2 = .008. As such, age six accounts for only 0.8% of the proportion of variance in treatment outcome. These results suggest that the variability in treatment outcome

accounted for by any of the categorical variables belonging to the three variables, gender, age, and diagnostic status, was so small as to be inconsequential.

3.2.3 *Multiple Regression*. As all predictive variables yielded nonsignificant bivariate relationships with treatment outcome, proceeding with a multiple regression analysis was unlikely to result in a significant prediction formula. However, to be absolutely certain a multiple regression analysis was conducted. Using the stepwise option the two highest correlations were entered (age six, r = -.088, and age five, r = .064). Both variables were excluded from the analysis due to the low correlations, indicating that a combination of predictive variables would not improve predictive validity.

3.3 Summary of Results

Three steps of analysis were used to determine whether child demographic variables were predictive of treatment outcome in the Early Skills Development Program. The present study determined that none of the child demographic variables examined, age, gender, and diagnoses of behaviour disorder, were predictive of treatment outcome in this particular intervention. Results from the independent samples t-test indicated that the categorical variables belonging to each variable did not differ significantly from one another in treatment outcome. For instance, the treatment outcome mean scores of male and female participants did not differ significantly. Particular limitations in the data set may have affected the results and this will be discussed in the next section.

Additionally, when bivariate correlations between treatment outcome and the child demographic variables were conducted no significant results were found. The highest relationship between treatment outcome and these dependent variables was found

with age six ($r = -.088$, $r^2 = .008$). Therefore, the highest bivariate correlation with treatment outcome indicated that only .8% of the variance in treatment outcome was attributed to participants age six.

Finally, while the proposed predictor variables yielded non significant bivariate relationships with treatment outcome, a multiple regression analysis confirmed that combining two or more predictor variables did not improve predictive validity.

Discussion

This section summarizes the research design of the present study, discusses the findings of the research questions under consideration and the implications of these findings. The limitations of the present study are presented and recommendations for future research are offered as they relate to the Early Skills Development Program.

4.1 Summary of Research Design

The purpose of this study was to determine if the child demographic variables available through the existing data base were predictive of treatment outcome in the Early Skills Development Program. The purpose of the Early Skills Development Program is to assist early school aged children with aggressive behaviours develop more appropriate social skills that will be transferred to the classroom, the home, and all aspects of their daily life. The Early Skills Development Program is based on cognitive behavioural and behavioural family therapy.

Data was collected on each child who participated in the Early Skills Development Program. For the purposes of this study, treatment outcome was determined by measuring the child's aggressive behaviour pre- and post-intervention using the

Teacher Report Form of the Achenbach Child Behaviour Checklist, Aggressive Behaviour Rating Scale. In addition to the Teacher Report Form of the Child Behaviour Checklist, facilitators of the program collected demographic data about each child, including the child's age, gender, diagnosis of a behaviour and/or mood disorder, and medication status.

This study consisted of 172 participants. The participants attended elementary schools in North Battleford or Saskatoon, Saskatchewan. The data from these participants was evaluated to determine if the child demographic variables: age, gender, and diagnoses of a behaviour and/or mood disorder, were predictive of their treatment outcome in the Early Skills Development Program. Data analysis consisted of a comparison of the mean difference in the treatment outcome for each variable, an analysis of the bivariate relationship between treatment outcome and the demographic variables, and multiple regression.

4.2 Research Findings

Results from the statistical analysis of the current study indicated that none of the demographic variables investigated predicted the treatment outcome of participants in the Early Skills Development Program. No significant differences were found when the mean difference between treatment outcomes of the following categorical variables were compared: male and female participants, participants ages five and six, and participants with a behaviour disorder and those without. Bivariate correlational analysis yielded similar results, where no significant relationships were found between treatment outcome and the categorical variables. Finally, the multiple regression analysis indicated that even

when the above categorical variables were combined a significant prediction formula was not found.

4.3 Implications of Findings

The lack of significant findings permits little for implications to program enhancement or alteration at this time, however, several limitations may have restricted the research findings, and with improvement, it is possible that findings may be found that would attain significance as indicated in previous studies. Additionally, there may be demographic variables not available in the extant data base that would account for the variance in the treatment outcome. For instance, academic and/or cognitive ability and the school location (variation in teacher/therapist) the child received intervention from.

4.4 Limitations

A notable limitation of the current work exists in the variables that can be examined. The present study was constrained by the extant data base available, based on the participant data gathered. Thus, it was only possible to conduct an analysis of those variables for which there is data available. Additional limitations existed *within* the extant data base. First, when a comparison of mean treatment scores was ascertained for gender, the Levene's Test for Equality of Variances indicated significant results suggesting unequal variances due to a discrepancy in sample sizes. It may be possible that given a more equal number of females, the difference between the respective treatment outcome mean scores may approach or attain significance as indicated in previous studies. For the remaining categorical variables that were analyzed (age and diagnoses of behaviour/mood disorder), while the Levene's Test for Equality of Variances did not produce significant results, the reader will note that the sample sizes were different

resulting in respectable sample sizes for some of the categorical variables and only moderate sizes for others. For instance, there were 121 participants age five and only 46 participants age six and 151 participants with no diagnoses and only 16 with a diagnoses. Given that the sample size of the "no diagnoses" categorical variable was especially small, the decision to examine this variable may be debatable. Increasing the sizes of the categorical variables which had smaller samples may alter the results, since the larger the sample the less chance of error in the findings.

Additionally, there was a lack of participants that fulfilled the requirements for analysis of the behaviour and/or mood disorder variable. Participants with a diagnosis included for the most part ADHD, although they constituted only a small portion of the total sample size. No participants with a mood disorder or additional behaviour disorders were part of the data set. This may limit the findings when compared to previous studies where the data included a more "well rounded sample" of participants. Finally, the extant data base was limited in the number of participants who were on a psychotropic medication to the extant that this particular variable and research question was terminated.

Finally, the results of the current study are restricted due to a lack of a control group. Previous research has stipulated that in order to determine the effects of a program, similar to the Early Skills Development Program, a study should include a control group (Golly et al., 2000). This limitation has been argued in previous evaluations of the Early Skills Development Program by both Headley (2000) and Leibel (2002). Brief consultation with a facilitator of this program indicated that the gathering of data from a control group is in progress.

4.5 Future Research

Future research may be benefited by resolving the above limitations. Additionally, for the present study, treatment outcome was defined by the pre- and post-test data using the Aggressive Behaviour Scale for reasons explained in section 3.1. However, one will recall that the Delinquent Behaviour Scale was also utilized by the facilitators of the program in determining the admittance and evaluation of each participant. Therefore, investigating the treatment outcome of participants in the Early Skills Development Program using the Delinquent Behaviour Scale may be an alternative for future research.

Finally, each participant's behaviour was rated prior to the intervention, after the ten week program, and then approximately every 4 to 40 weeks post-treatment across the years the program has been in existence. For the present study, treatment outcome was determined by evaluating participant data from immediately prior to and after treatment and did not include data collected across the intervals. Future research may find different results when including all post-treatment data as part of treatment outcome since the difference between pre- and post-treatment scores may differ after time. Previous research has stipulated that the "program has not produced significantly lower levels of aggression over the longer term" (Leibel, 2002). This finding may impact the predictability of the treatment outcome over the longer term as well. Moreover, by examining the predictability of treatment outcome across several post-treatment intervals the dynamics of some of the demographic variables will change. For instance, the age range of participants will increase due to the difference in length between pre- and post-treatment.

4.6 Conclusion

In conclusion, the Early Skills Development Program has been found to be successful by three previous studies to significantly reduce the aggressive behaviour of its participants (Mykota, 1999; Headley, 2000; Leibel, 2002). However, Leibel (2002) also found that a some participants were showing a greater decrease in aggression then others suggesting the need for an investigation into what variables predict treatment outcome.

The present study did not find any significant results in the statistical analysis of the predictive validity of the following child demographic variables in treatment outcome: age, gender, and diagnoses of a behaviour and/or mood disorder. Indeed, there was a large amount of variability in the treatment outcome of the participants when they were examined based on the demographic variables. This is evidenced by the large standard deviations of the mean difference in treatment outcome when the data was analyzed using an independent samples t-test. However, the present study was unable to uncover the cause of that variability based on the demographic variables.

Implications of the results from the current study on the Early Skills Development Program are twofold. Future research replicating the present study may be improved by greater sample size overall and thus greater sampling sizes of the categorical variables under analysis. Additionally, the presence of a control group would be beneficial. On the other hand, the results may indicate that the demographic variables being analyzed in the present study may not be predictive of treatment outcome in the Early Skills Development Program and other demographic or additional variables may be accounting for the variance. Additional variables, including psychological factors and family demographic factors of the child (e.g., family status) may be accounting for the variance in the treatment outcome of the Early Skills Development Program. Study Two and Study

Three will examine the psychological and family demographic variables, respectively, of the extant data base from the Early Skills Development Program to determine if these variables account for a proportion of the variance in the treatment outcome of the Early Skills Development Program.

STUDY TWO: EXAMINING CHILD PSYCHOLOGICAL VARIABLES IN PREDICTING TREATMENT OUTCOME

Literature Review

1.1 Overview of Relevant Literature

The following provides a brief overview of aggression, the treatment of aggression, and the Early Skills Development Program, including previous evaluations. For further discussion of these areas, the reader is referred back to sections 1.1 through 1.4 of the previous study.

1.1.1 Treatment of Aggression. A review of the literature indicates that aggression is a behaviour that remains stable over time. If high levels of aggression are maintained, there is an increased risk for later problems, including substance abuse and criminal activity (Lochman, 1990; Lochman et al., 1989). Early intervention appears to yield the best results in dealing with the trajectory of aggression (Golly et al., 2000).

Studies have shown that two forms of treatment or intervention are efficacious: Cognitive Behavioural Therapy and Behavioural Family Therapy. The goal of Behavioural Family Therapy is to reduce parents' aversive and controlling behaviour and increase the use of social reinforcement, while Cognitive Behavioural Therapy attempts to reduce cognitive distortions and deficiencies in the child that maintain the aggressive behaviour (Lochman, 1990).

Several interventions incorporate the theories that underlie Cognitive Behavioural Therapy and Behavioural Family Therapy. For instance, a program, "Think Aloud", was designed to specifically increase self-control in aggressive six to eight year old boys (Camp et al., 1977). Additionally, the Anger Coping program was developed based on these techniques and is uniquely incorporated into the school setting (Lochman et al., 1989). The Anger Coping program was founded on a social-cognitive model of anger

arousal, which is well established in the literature (Lochman et al., 1989) (see page 180). While this type of intervention has been found effective, not all children improve (Lochman et al., 1989).

1.1.2 Early Skills Development Program. The Early Skills Development Program is based on a foundation of Cognitive Behavioural Therapy and Behavioural Family Therapy. This program was implemented in North Battleford and Saskatoon Schools with funding from Saskatchewan Health as an early intervention initiative available for severely aggressive children in Kindergarten and Grade One. The purpose of the Early Skills Development Program is to "help kindergarten children with persistent aggressive or violent behaviours to develop more socially acceptable interaction styles so that they are less at risk for social rejection and/or neglect" (Child and Youth Services, 2002, p.5).

Data was collected on each child who participated in the Early Skills Development Program, including demographic information, psychological syndromes, and evaluation of the child's aggressive behaviour pre- and post-intervention. Psychological syndromes and the evaluation of aggressive behaviour were measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist.

Evaluations of the efficacy of the Early Skills Development Program have been conducted since the program's commencement. Mykota (1999) evaluated the Early Skills Development Program first and found a significant positive effect on the aggressive behaviour of the targeted children. In addition, Mykota reported that the program remained stable over time, at least two and four months after intervention. The second evaluation, by Headley (2000), examined the effectiveness of the Early Skills

Development Program based on four scales: Aggressive Behaviour, Delinquent Behaviour, Social Problems, and Attention Problems and found statistically significant differences between pre- and post-test means that suggest, quantitatively, the effectiveness of the program in improving skills in these four areas.

Similar to the previous two evaluations, Leibel (2002) determined "there were decreases in child's aggressive and/or violent behaviour as a function of participating in the Early Skills Development Program, which over a three-year period lead to a decrease in negative behaviour in school" (p.81). In addition, the targeted children's behaviour showed stability after the program, neither decreasing further nor increasing back to pre-treatment levels.

While Leibel (2002) found statistically significant deceases in aggression, many children remained in the at-risk range on the Teacher Report Form of the Child Behaviour Checklist, while a few showed decreases of aggressive behaviour into the normal range. The finding of some children showing greater improvement over others suggests the need for examination of the predictive variables that affect various treatment outcomes. Predictive variables may include demographic factors, psychological factors, and/or family demographic factors.

In the previous study, the writer examined the demographic variables available in the extant data base to determine if they were predictive of treatment outcome. These demographic variables included: age, gender, diagnoses of behaviour and/or mood disorder, and psychotropic medication status. The results of the previous study indicated that none of these demographic factors were predictive of treatment outcome in the Early

Skills Development Program. Several limitations, including sample sizes, may have affected the results.

1.2 Child Psychological Variables Affecting Treatment Outcome

As was previously mentioned in Study one, it is important to understand not only if a particular treatment is effective overall but why and with whom is it most effective. Results from predictive studies will direct clinicians and practitioners toward providing treatment to those who will most benefit, finding alternative therapy for those clients who need something different, or possibly supplementing existing treatments for those who need something more, all in order to improve overall treatment effectiveness.

What follows is a discussion of the literature that specifically examines *child psychological variables* that may be predictive of treatment in aggressive children. Ansari, Gouthro, Ahmad, and Steele (1996) examined the effects of a behavioural modification program in an inpatient treatment facility with adolescents with conduct problems. The adolescents displayed a variety of conduct problems including truancy, aggression, and promiscuity. Relevant to the present study, Ansari et al. examined the following predictors of treatment outcome: diagnoses of psychological disorders and learning problems. The most positive treatment outcomes were found in non-conduct disordered patients. If the patient was conduct disordered, then more success was found when there was an extended length of stay (past 24 weeks). In addition, a positive treatment outcome was found to be predicted by the absence of learning problems.

Frankel, Myatt, Cantwell, and Feinberg (1997) examined what variables would predict transference of skills to school using a cognitive behavioural social skills training program in a treatment facility. Frankel, Myatt, and Cantwell (1995) in an earlier study

determined that this social skills training program significantly decreased ratings of aggression and withdrawal compared to a control group. Results from Frankel et al. (1997) indicated that several factors were related to treatment outcome. Children who scored lower on the Likeability scale responded more positively to treatment response as compared to children who scored high on the Likeability scale. Children who scored high on Aggression and low on Thought Problems of the Child Behaviour Checklist were more likely to respond positively to treatment and vice versa. Children who had not been diagnosed as having oppositional defiant disorder were more likely to respond positively.

Phillips, Schwean, and Saklofske (1997) found similar results to Frankel et al (1997) when they examined students from Saskatchewan schools who participated in the Day Treatment Program, a cognitive-behaviour based treatment for aggressive children that is one part of the Early Skills Development Program being examined in the current study. The Day Treatment Program was originally implemented on its own before additional components to the treatment of aggressive children transformed it into the Early Skills Development Program. Teachers referred and gave pre-test data using the Child Behaviour Checklist. Children were selected based on scores that exceeded a clinical cut-off on at least one of the Externalizing Composite subtest including Inattentive, Aggressive, and Delinquent, which are all highly correlated and related to child conduct disorders. Post-test data was gathered when the same teacher completed the Child Behavioural Checklist at the end of the program. Participants were mostly aged 11 years and under and male. The program was implemented by teachers and overseen and developed by staff at a Regional Mental Health Centre. Sessions focused on cognitive and social skills and reinforced with a token economy system. Overall, Phillips et al.

found that the Day Treatment Program was a successful method of reducing aggressive behaviour in children, particularly unpopular children who may have had greater motivation to change. Popular aggressive children, unlike their counter parts, use aggression proactively (not reactively) and are rewarded continuously by positive reinforcement of praise and privileges according to Phillips et al. Phillips et al. concluded that the popular children of the program appeared to be less "responsive to or accepting of vales and ideas inherent in these programs" (p.62).

To further investigate these findings, Phillips, Schwean, and Saklofske (Draft Copy) examined the same participants from the Day Treatment Program to investigate more extensively behavioural indicators that might predict clinical treatment outcome. Behavioural indicators included the subtests/composites of the Child Behaviour Checklist. Phillips et al. confirmed from their previous study that the aggressive and socially withdrawn child (i.e., unpopular) is the one who most benefits from the Day Treatment Program. "Both the existing literature and the data from this study paint a picture of the rejected child as unhappy, without friends, and the target of a variety of aversive social sanctions form both peers and authorities" (Phillips et al. Draft Copy, p.7). As such, this study confirms the author's previous assumptions that the unpopular child who uses aggression reactively (as opposed to proactively for personal gain and status) most benefits from the program. The authors explain why the unpopular child may predict more positive treatment outcome:

> A lonely, unhappy child therefore may view programs such as this as a lifeline to something better. This may explain why programs which are built upon reinforcements and social praise succeed when school and

> social models of punishment fail. These children are already unhappy and miserable, we only add to their burden by punishing them further for their disabilities (Phillips et al. Draft Copy, p.7)

Conversely, this theory also suggests that an opposing program/paradigm must exist for the popular aggressive child who uses aggression to gain status and dominate others. This form of aggression, sometimes viewed positively by others (e.g., in sports such as hockey) and sometimes negatively (e.g., bullying) is in many ways the child's "source of influence and power" (Phillips, Schwean, & Saklofske, 1997, p.66). Attempting to reward a child for non-aggressive behaviour when their own aggression is already being rewarded would be futile (Phillips et al. Draft Copy). Therefore, the motivation behind the misbehaviour must be closely linked with the modification of misbehaviour. This is already a tenet of the Day treatment Program; however, with the current research more direct action may be taken to ensure the implementation of it.

Similarly, Lochman, Lampron, Burch, & Curry (1985) examined psychological characteristics associated with treatment outcome. Previous research suggests that children with lower self-esteem and poorer problem solving skills have higher rates of aggression (Lochman et al, 1985). Therefore, Lochman and colleagues examined the relationship between behaviour change and these two factors. Results from their study show similar findings to previous studies. For instance, boys who had the highest rates of aggression showed the most improvement with treatment. Since the same was not found in the control group, Lochman et al. suggests that the findings are not a result of regression to the mean. As well, boys who had the worst problem solving ability showed the greatest improvement. Interestingly, boys with high levels of somatization showed the

greatest improvement. Lochman et al. states that somatic complaints may be indicative of anxiety and "this may suggest that these boys were more uncomfortable with their aggressive behaviour and more motivated to respond to external monitoring and consequences inherent in the goal-setting procedures" (p.536). Parallel to the Phillip et al (1997, Draft Copy) studies, more significant improvements were found in boys who were considered unpopular with their peers. As well, higher levels of self esteem were found to be associated with less change and lover levels associated with greater improvement such that "boys with low self-esteem may have been much more receptive to even minimal attention and external structure" (p.536). In combination with Phillips et al. (1997, Draft Copy), Lochman et al.'s findings appear to suggest that a child with low self-esteem, less popular, anxious, and unable to solve their own problems efficiently is more likely to improve in a cognitive behavioural program for aggression. Conversely, children with high self-esteem, popular, able to solve their own problems efficiently, feel confident in their own selves and behaviour and methods of interacting with others are less likely to adhere to or benefit from a program that is attempting to change what already works well for them.

Copeland and Hammel (1981) examined predictive variables in treatment for children who showed impulsivity and aggressive responses in their problem-solving approaches. These authors demonstrated that the treatment was more effective in reducing impulsive problems solving then no treatment in the control group. As well, results indicated that treatment outcome was positively related to higher cognitive levels, more positive therapist ratings, less private speech, lower activity level, and internal attributions of causality. Copeland and Hammel summarize that "cognitively more

mature, more involved and cooperative, and more 'internal' children profit more from CSI (cognitive self instruction) training" (p. 416, parenthesis added). It follows that those children who are more verbally mature will have better outcomes in treatment that is verbally mediated (Copeland & Hammel, 1981).

Kazdin and Crowley (1997) also examined psychological characteristics in predicting treatment outcome by investigating the effects of cognitive functioning and reasoning abilities, academic difficulties, and achievement in children and adolescents in a cognitive behavioural program. Kazdin and Crowley proposed that older children were more likely to respond positively to cognitive-behavioural therapy because of the higher levels of cognitive functioning and reasoning abilities required. Older children may respond better to cognitive behavioural interventions as well because they include children with later onset (less severe and less stable symptoms) of conduct problems. As well, IQ, achievement, and academic abilities have been shown to be related to poor prognosis of conduct issues (Kazdin & Crowley).

Results from Kazdin and Crowley's (1997) study indicate predictor variables which had a negative correlation with positive treatment outcome to be academic dysfunction (school delays, failing) and more symptoms at intake across a range of disorders. Symptoms on the DSM-IIIR diagnoses include conduct disorder, oppositional defiant disorder, attention deficit hyperactivity disorder, anxiety, and depression. Findings also indicated IQ with gender in predicting treatment outcome, such that girls with higher IQ predicted a positive treatment outcome.

Kazdin and Wassell (2000) examined factors that could be related to preventing change in treatment with aggressive, oppositional, and antisocial children. Child severity

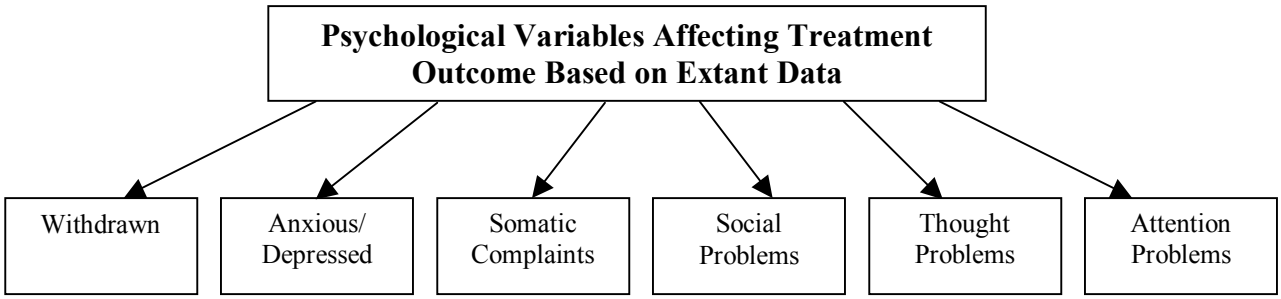
of impairment was examined to determine whether it would influence response to treatment using a cognitive problem-solving skills training and parent management training. Results indicate that "less severe child dysfunction at pre-treatment predicted greater therapeutic change among children" (Kazdin & Wassell, p.35).

1.3 Summary

While research has shown efficacy of Cognitive Behavioural Therapy and Behavioural Family Therapy with aggression, results are mixed indicating the need for more refined research questions that concern the psychological characteristics of children which may affect outcome. It is important to identify factors that predict successful treatment outcome to enhance understanding of how a treatment operates, as well as which children are most likely to benefit and which would be better served by alternative treatments. The preceding discussion outlined the existing literature on child psychological factors or variables that may predict treatment outcome in aggressive children.

For the purposes of the current study, an investigation of child psychological variables will occur. A notable limitation of this study exists with the variables that can be examined. This study is constrained by the extant data base available, based on the participant data gathered. Thus, it is only possible to conduct an analysis of those variables for which there is data available. The following table illustrates which psychological variables from the literature are available for analysis based on the existing data set of the Early Skills Development Program.

Figure 1.1 Psychological Variables



1.4 Research Statement

The objective of this research study is to determine what child psychological variables predict treatment outcome in the Early Skills Development Program. Based on previous research and extant data available from the Early Skills Development Program, the general research hypothesis in this study is:

Certain psychological variables will predict behaviour change on the Aggressive Behaviour Scale of the Teacher Report Form on the Achenbach Child Behaviour Checklist immediately following treatment in children who have received treatment in the Early Skills Development Program.

The following questions will be examined specifically:

1. Previous research has demonstrated that children who were more socially withdrawn were more likely to show positive behaviour change in a cognitive behaviour change treatment program (Phillips et al., 1997). Therefore, will a score equal to or exceeding a cut off T-score of 60 on the *Withdrawn* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

2. Research suggests that high rates of somatic complaints is predictive of positive treatment outcome (Lochman et al., 1985). Therefore, will a score equal to or exceeding a cut off T-score of 60 on the *Somatic Complaints* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?
3. Previous research suggests that symptoms of anxiety and depression can be predictive of positive treatment outcome (Kazdin & Crowley, 1997). Thus, will a score equal to or exceeding a cut off T-score of 60 on the *Anxious/Depressed* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?
4. Previous research demonstrates that children who were considered to have social problems and were less liked by their peers predicted a more positive treatment outcome (Frankel et al., 1995). Therefore, will a score equal to or exceeding a cut off T-score of 60 on the *Social Problems* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?
5. A previous study indicated that children who scored high on Aggression and low on Thought Problems of the Child Behaviour Checklist were more likely to respond positively to treatment (Frankel et al., 1997). Therefore, will a score equal to or exceeding a cut off T-score of 60 on the *Thought Problems* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive

Behaviour Scale immediately following treatment change in the Early Skills Development Program?

6. Previous research suggests that symptoms of attention difficulties can be predictive of negative treatment outcome (Kazdin & Crowley, 1997). Therefore, will a score equal to or exceeding a cut off T-score of 60 on the *Attention Problems* Scale of the Child Behaviour Checklist predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

Methodology

2.1 Group Selection

Data was collected from students in seven schools in North Battleford and six schools in Saskatoon who had participated in the Early Skills Development Program from September of 1997 in North Battleford and from January 1998 in Saskatoon to June 2003 in both sites. The Early Skills Development Program is a school and home based program for severely aggressive 5 to 6 year olds. The program is based specifically on cognitive behavioural interventions but includes some behavioural family interventions as well to improve generalizability of treatment behaviour. Students were selected based on their teachers identifying them as presenting with continual aggression or violent behaviours. Teachers were required to complete the Child Behaviour Checklist-Teacher Report Form. Students were eligible for the Early Skills Development Program if their scores from the Teacher Report Form- Aggression Problem Scale and/or Delinquent Behaviour Scale- were equal to or exceeded a cut off T-score of 60.

2.2 Participants

Participants from the Early Skills Development Program ranged in age between four and seven years when they started the program and would currently be between eight and eleven years of age. There were 172 participants available with the majority being male. Data had been collected with regard to change in behaviour, rated using the eight clinical scales on the Teacher Report Form, in order to investigate possible predictor variables.

2.3 Instrumentation

Evaluation of participants' aggressive behaviour pre- and post-intervention was measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist. Research findings support the use of teacher rating scales as both valid and reliable measures for the assessment of psychological and behavioural problems (Sattler, 1992). This is thought to be a result of the standardized environment teachers work in and the variety of students to whom they can compare a students' school performance, adaptive functioning, and problem behaviour (Sattler, 1992).

The Teacher Report Form was used at the beginning of the Early Skills Development Program to evaluate if participants would be accepted into the program. The Teacher Report Form was subsequently used to evaluate the participants' behaviour at the conclusion of the ten-week program and across several intervals succeeding the program up until approximately grade two or three years post the first evaluation. Only pre-test and post-test data that was taken immediately prior to and immediately following intervention will be utilized in the analysis of the data to determine if particular psychological variables are useful in the prediction of treatment outcome. Since it is not

the goal of this study to examine generalizability, it is beyond the scope of the analysis to examine the follow-up evaluations that have been conducted with each participant at subsequent intervals following treatment.

The Child Behaviour Checklist-Teacher Report Form was developed by Achenbach (1983) and is a rating scale that is intended to obtain information regarding problem behaviour syndromes. The Teacher Report Form also provides scales for adaptive behaviour and school performance. The Teacher Report Form has 113 items. Eight clinical scales are provided: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, and Aggressive Behaviour.

2.4 Procedure

Participants of the Early Skills Development Program were identified, by teachers, as presenting with severe and continuous aggressive behaviour. Teachers rated the children on the Teacher Report Form in order to determine the participant's eligibility for the program (see Appendix C). If the child scored a T-score of 60 or higher on the Aggressive and/or Delinquent Behaviour Scale, they were admitted into the program. While the treatment outcome can be evaluated using pre- and post-test data from either the Aggressive and/or Delinquent Behaviour Scale, for the purposes of this study, the pre- and post-test data from the Aggressive Behaviour Scale was selected. This was based on the finding that 97.1% of participants in the program could have been admitted based on their T-score of 60 or higher on the Aggressive Behaviour Scale.

Additionally, teachers were required to rate children's behaviour on six additional scales measuring psychological syndromes, including: Withdrawn, Somatic Complaints,

Anxious/Depressed, Social Problems, Thought Problems, and Attention Problems. These ratings were utilized in the present study to evaluate the predictive validity of psychological factors. Teacher's ratings were based on a Likert scale ranging from 0 (not true), score of 1 (somewhat or sometimes true), to score of 2 (very or often true). Statements the teachers were required to rate included: "Destroys property belonging to others" and "Gets into many fights" (see Appendix C). The Teacher Report Form scales were scored and charted for each child (see Appendix B).

After permission was gained from parents, children went through a ten week cognitive behaviour skills training. The parents were also involved in a parent training component. The ten-week cognitive behaviour skills training program is called the Early Skills Development Program. The Early Skills Development Program was described previously and therefore will not be repeated. Readers are referred to section 1.3 for more information. At the end of the ten weeks, teachers were required to complete a Teacher Report Form.

2.5 Data Analysis

The following psychological variables were examined to determine their predictive validity in the treatment outcome of the Early Skills Development Program: Attention, Somatic Complaints, Anxiety/Depression, Social Problems, Though Problems, and Rate of Withdrawn Behaviour. To ascertain if these variables were predictive of treatment outcome, a series of steps was required for statistical analysis. The analysis of the present study involved the calculation of frequencies, means, standard deviations, equality of variances, independent sample t-tests, correlations, and multiple regression. Statistical analyses of the data were computed using the SPSS computer program.

First, treatment outcome was determined for each participant in the Early Skills Development Program through the teacher ratings on the Child Behaviour Checklist-Teacher Report Form using the pre- and post-test scores of the Aggressive Behaviour Rating Scale. Specifically, the variable "treatment outcome" was created by subtracting pre-test from post-test scores. Treatment outcome is the dependent/criterion variable or the difference between pre- and post-test evaluations on the Aggressive Behaviour Rating Scale of the Teacher Report Form of the Child Behaviour Checklist. The independent/predictor variables included the demographic variables.

Treatment outcome was used in computing an independent sample t-test to determine whether the difference in treatment outcome for each variable was significant. An independent sample t-test was first employed because the psychological variables (i.e., at or above T score of 60 and at or below a T score of 59) are independent samples being compared based on the treatment outcome to determine if there is a significant difference between the mean scores for the two groups. A significant difference would suggest the possibility of one group being a better predictor over the other. Correlations with all the psychological variables were then computed to determine the bivariate relationship with the treatment outcome variable. Finally, to determine if predictive validity could be increased by combining two or more independent or predictor variables, a multiple regression statistical analysis was computed.

Results

The purpose of this study was to determine whether child psychological variables were predictive of treatment outcome in the Early Skills Development Program, which uses cognitive behavioural treatment for aggressive behaviour in Kindergarten and Grade One children. The results of this study are outlined in this section. The first section outlines the descriptive statistics analyzed including the examination of the quality of the data, frequencies of variables, and the creation of new variables. An in-depth analysis of the proposed predictive variables is then presented including correlations to demonstrate the variance accounted for and multiple regression to determine if combining more than one variable would increase predictive validity.

3.1 Descriptive Analysis

The present study examined the predictive validity of child psychological variables in the treatment outcome of the Early Skills Development Program. At both pre- and post-treatment, participants were evaluated on the Child Behaviour Checklist-Teacher Report Form. This Child Behaviour Checklist renders eight scales of psychological factors including emotional and behavioural problems. Table 3.1 shows the pre- and post-treatment means, standard deviations, and standard error of the mean from the Child Behaviour Checklist-Teacher Report Form scales.

Table 3.1 Descriptive Data from Psychological Variables

Scale	Time Interval	Mean	Standard Deviation	Standard Error of Mean
Withdrawn	Pre	60.06	7.517	.573
	Post	57.22	6.528	.498
Somatic Complaints	Pre	55.20	6.367	.485
	Post	54.47	6.188	.472
Anxious/Depressed	Pre	58.31	8.612	.657
	Post	56.26	6.685	.510
Thought Problems	Pre	59.73	9.664	.737
	Post	56.61	8.622	.657
Social Problems	Pre	64.70	6.957	.530
	Post	60.81	7.214	.550
Attention Problems	Pre	64.41	8.780	.670
	Post	59.95	8.610	.657
Aggressive Behaviour	Pre	74.99	9.636	.735
	Post	66.77	10.216	.779
Delinquent Behaviour	Pre	65.90	7.713	.588
	Post	62.09	8.196	.625

Using the standard error of the mean, it was noted that there was no overlap between the pre and post-treatment means of the Aggressive Behaviour Scale, suggesting that participants showed significant decreases in aggressive behaviour following treatment. Briefly this confirmed that the Early Skills Development Program is efficacious in lowering aggressive behaviour in young children. For the present study, the goal was to determine whether the pre-treatment scores of participant's rates of Withdrawn, Anxious/Depressed, Thought Problems, Social Problems, and Somatic Complaints would be predictive of treatment outcome of Aggressive Behaviour. Specifically, the data was examined to determine whether a pre-treatment T score of 60 or over would predict treatment outcome. A T-score of 60 or over was determined as the cut point because previous research on the Child Behaviour Checklist indicates that that this cut point demarcates the borderline clinical range where those children who score 60 or higher are more likely to be clinically referred (Achenbach, 1991). Before ascertaining

the predictability of these psychological variables, it is interesting to note that, based on no overlap in the range of the SEM, each of the psychological variables showed a significant decrease after treatment.

The data was examined to determine whether each proposed variable was suitable for analysis and to make changes if they were not. Two steps were involved in this: frequency of variables and the creation of new categorical variables. Each factor was examined for the frequency of the variables as they existed in the original data. In the original data, each participant had a T score of 0 through 100 assigned to them on each psychological scale. Data was transformed to create a dichotomy of each participant either having a T score of 60 or higher or a T score of 59 or lower. This cut point was used because it represents the borderline clinical range, where any participant who had a T score of 60 or higher was showing at least borderline signs of a clinically significant psychological problem. The higher the T score, the more significant the psychological problem. Additionally, using this cut point gives practical application to the results, such that facilitators of the program can determine predictability of treatment outcome based on the presence of a psychological problem. The following table illustrates the frequencies of the variables once they have been designated into the two categorical variables based on the cut point.

Table 3.2 Frequencies Based on Cut Point

Factor	Variable	Frequency	Percentage
Withdrawn	T Score ≥60	87	50.6
	T Score ≤59	85	49.4
Somatic Complaints	T Score ≥60	38	22.1
	T Score ≤59	134	77.9
Social Problems	T Score ≥60	129	75
	T Score ≤59	43	25
Thought Problems	T Score ≥60	94	45.3
	T Score ≤59	78	54.7
Attention Problems	T Score ≥60	121	70.3
	T Score ≤59	51	29.7
Anxious/ Depressed	T Score ≥60	66	38.4
	T Score ≤59	106	61.6

The final variable to be created was the dependent variable "treatment outcome". Participants were accepted into the Early Skills Development Program based on a T-score of 60 or higher on either the Aggressive or Delinquent Behaviour Scales. Therefore, treatment outcome could be based on the mean difference between pre- and post-test data from either scale. However, by comparing the frequency of participants who were accepted into the program with either the Aggressive Behaviour Scale or the Delinquent Behaviour Scale, a decision was made to use only the Aggressive Behaviour scale pre- and post-test scores in determining treatment outcome. Additionally, the objective of this study is to determine what variables are predictive in the treatment of aggression, not delinquency. Therefore, it is logical to use a treatment outcome that is based on the purest measure of the behaviour. The following tables display the number of the participant accepted to the program based on the Aggressive Behaviour Scale versus the Delinquent Behaviour Scale.

Table 3.3 Participants Accepted Based on Aggressive Behaviour Scale

T- Score	Frequency	Percent
≥ 60	167	97.1
≤ 59	5	2.9
Total	172	100.0
Missing	0	0.0

Table 3.4 Participants Accepted Based on Delinquent Behaviour Scale

T- Score	Frequency	Percent
≥ 60	146	84.9
≤ 59	26	15.1
Total	172	100.0
Missing	0	0.0

Using the pre- and post-test scores from the Aggressive Behaviour Scale to determine the treatment outcome of each participant targeted the objective of this study by examining the prediction of aggression using the purest measure possible. As well, using the Aggressive Behaviour Scale includes 97.1% of participants in the sample. If one were to use the Delinquent Behaviour Scale only 84.9% of participants would be under investigation. Therefore, it was more rational to use the treatment outcome that includes the greater number of participants.

Using the Aggressive Behaviour Scale, treatment outcome was based on the difference between pre- and post-test data. From the 172 participants a range of differences in treatment outcome was observed. The following table illustrates these differences in treatment outcome and the frequency with which they occur.

Table 3.5 Descriptive Analysis of Treatment Outcome

Treatment Outcome	Frequency	*Percent*
-23	1	*.6*
-20	2	*1.2*
-16	1	*.6*
-15	1	*.6*
-14	1	*.6*
-11	1	*.6*
-10	1	*.6*
-9	1	*.6*
-8	1	*.6*
-7	3	*1.7*
-5	2	*1.2*
-4	2	*1.2*
-2	3	*1.7*
-1	7	*4.1*
0	7	*4.1*
1	3	*1.7*
2	4	*2.3*
3	9	*5.2*
4	7	*4.1*
5	6	*3.5*
6	13	*7.6*
7	9	*5.2*
8	6	*3.5*
9	5	*2.9*
10	7	*4.1*
11	7	*4.1*
12	5	*2.9*
13	6	*3.5*
14	7	*4.1*
15	5	*2.9*
16	1	*.6*
17	7	*4.1*
18	5	*2.9*
19	4	*2.3*
20	6	*3.5*
21	4	*2.3*
22	2	*1.2*
23	1	*.6*
24	1	*.6*
25	2	*1.2*
26	2	*1.2*
27	1	*.6*
28	1	*.6*
31	1	*.6*
39	1	*.6*

Total	*172*	*100.0*

Once the new categorical variables were created and the data was suitable for examination, three different stages of data analysis occurred. The following presents each stage of data analysis.

3.2 Data Analysis

In determining whether the child psychological variables were predictive of treatment outcome in the Early Skills Development Program, three stages were involved in the statistical analysis. A comparison of the means was conducted using an independent samples t-test. Correlations were also computed to examine the bivariate relationship of each of the child psychological variables with treatment outcome. Finally, a multiple regression analysis follows to determine whether combining the variables would generate improved predictive validity of the treatment outcome.

3.2.1 Comparison of Means. Each variable was examined using an independent sample t-test. For Withdrawn, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 ($\underline{M}$ = 10.48, $\underline{SD}$ = 5.89) with that of participant with a T score of ≤ 59 ($\underline{M}$ = 5.89, $\underline{SD}$ = 9.25). The alpha level was set at .05. This test was found to be statistically significant, $\underline{t}$ (170) = 3.09, $\underline{p} < .05$, indicating that participant's who have at least a borderline clinical score on the Withdrawn variable performed significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant results, indicating that unequal variances were not a concern for the two groups under comparison.

For the Anxious/ Depressed Scale, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 (M = 10.67, SD = 10.15) with that of participant with a T score of ≤ 59 (M = 6.69, SD = 9.61). The alpha level was set at .05. This test was found to be statistically significant, t (170) = 2.58, p < .05, indicating that participant's who have at least a borderline clinical score on the Anxious/Depressed variable performed significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant results, indicating unequal variances were not a concern for the two groups under comparison.

For the Social Problems Scale, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 (M = 9.54, SD = 9.96) with that of participant with a T score of ≤ 59 (M = 4.23, SD = 9.01). The alpha level was set at .05. This test was found to be statistically significant, t (170) = 3.097, p < .05, indicating that participant's who have at least a borderline clinical score on the Social Problems variable performed significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant results, indicating that unequal variances were not a concern for the two groups under comparison.

For the Somatic Complaints Scale, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 (M = 6.16, SD = 9.41) with that of participant with a T score of ≤ 59 (M = 8.80, SD = 10.09). The comparison between the two groups based on a cut point of 60 found statistically nonsignificant results (alpha of .05) indicating that participant's who

have at least a borderline clinical score on the Somatic Complaints variable did not perform significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant results, indicating that unequal variances were not a concern for the two groups under comparison.

For the Thought Problems Scale, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 (M = 8.67, SD = 10.72) with that of participant with a T score of ≤ 59 (M = 7.84, SD = 9.36). The comparison between the two groups based on a cut point of 60 found statistically nonsignificant results (alpha of .05) indicating that participant's who have at least a borderline clinical score on the Thought Problems variable did not perform significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant results, indicating that unequal variances were not a concern for the two groups under comparison.

For the Attention Problems Scale, an independent samples t-test was performed comparing the mean difference in the treatment outcome of those participants with a T score ≥ 60 (M = 8.61, SD = 10.45) with that of participant with a T score of ≤ 59 (M = 7.27, SD = 8.79). The comparison between the two groups based on a cut point of 60 found statistically nonsignificant results (alpha of .05) indicating that participant's who have at least a borderline clinical score on the Attention Problems variable did not perform significantly better in treatment outcome than those participants who did not. It should be noted that the Levene's Test for Equality of Variances found nonsignificant

results, indicating that unequal variances were not a concern for the two groups under comparison.

3.2.2 Correlations. Given that only three of the variables were found to be significantly different, it logically follows that at least these three variables, Withdrawn, Anxious/Depressed, and Social Problems, would likely present with predictive validity when examined using correlational statistics. By conducting a correlational analysis, it is possible to determine the extent of bivariate relationships with treatment outcome. The correlations between the dependent variable, treatment outcome, as measured by the Child Behaviour Checklist-TRF Aggressive Behaviour Scale, and the independent variables, Withdrawn, Anxious/Depressed, Social Problems, Somatic Complaints, Thought Problems, and Attention Problems, are displayed in Table 3.5.

Table 3.6 Correlations by Variable

	T.O.	Somatic Comp.	With-drawn	Anxious/ Depressed	Social Problem	Thought Problem	Attention Problem
T.O. [1]	1.000						
Somatic Complaints	-.110	1.000					
Withdrawn	.231**	.246**	1.000				
Anxious/ Depressed	.194*	.243**	.326**	1.000			
Social Problems	.231**	.275**	.208**	.290**	1.000		
Thought Problems	.041	.219**	.316**	.122	.148	1.000	
Attention Problems	.061	.039	.249**	.067	.272**	.233**	1.000

* p<.05; **p<.01 [1] Treatment Outcome

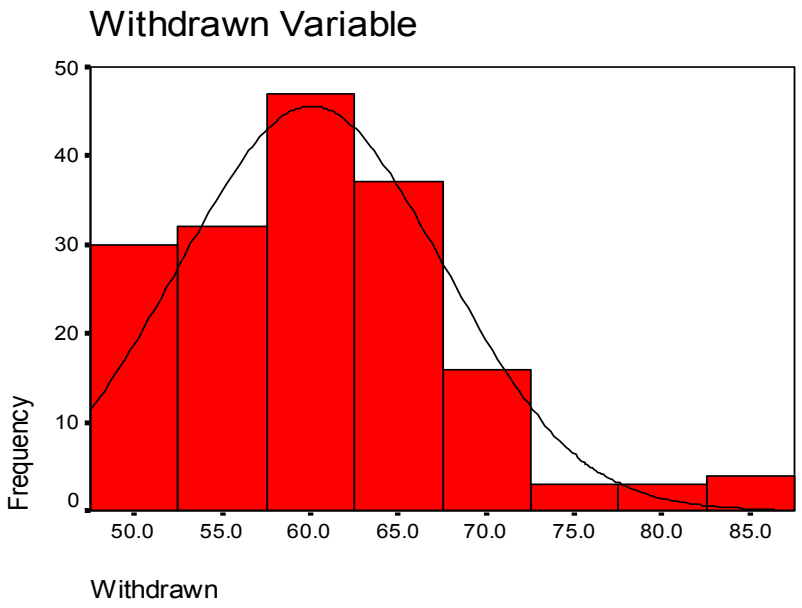
By observing the relationships between the variables, it is apparent that the same three variables found to have significantly different mean scores were also found to have

significant correlations with treatment outcome. These three variables included, Withdrawn, Anxious/Depressed, and Social Problems. Specifically, having a T score of 60 or higher on the Withdrawn variable was tied with the Social Problems variable as the strongest positive predictor of treatment outcome. Therefore, since $r = .231$ and $r^2 = .053$, for treatment outcome, 5.3% of the variability was due to the correlation between participants with a T score of 60 or higher on the Withdrawn scale and participants on the Social problems scale with treatment outcome. One other variable was also found to be significantly correlated to treatment outcome, Anxious/Depressed. For participants who had a T score of 60 or higher on the Anxious/Depressed scale, where $r = .194$ and $r^2 = .038$, for treatment outcome, 3.8% of the total variability was due to the correlation with participants who had a T score of 60 or higher on the Anxious/Depressed scale and treatment outcome.

It should be noted that the original plan for analysis involved examining the psychological variables in their original form as a continuous variable. In the case of the variables being continuous, the theoretical assumption was that a participant could achieve a T score anywhere between 0 and 100. However, the data was transformed such that each psychological variable became dichotomous for two reasons. First, as was discussed in section 3.1 of the current study, a cut point of a T score of 60 or higher has been established as demarcating those children who present with borderline clinical symptoms and are more likely to be clinically referred. Therefore, this score is one that is practically significant to individuals who are implementing the Early Skills Development Program. They can use this cut point as a means for identifying those possible participants who will or will not do well in the program.

Second, the choice to dichotomize was necessary for statistical purposes. While theoretically a participant may get a score between 0 and 100, most participants scored somewhere between 40 and 70. Analogous to this trend is the example of how a student can theoretically get a percentage between 0 and 100 but for the most part, students actually receive scores between 60 and 90 percent. This creates a restricted range for correlational analysis that produces a "floor effect". If the range of T scores went below 40, then one would often find a normal distribution in the psychological variables, as evidenced by figure 3.1. The Withdrawn variable is used as an example here, however the remaining psychological variables show a similar pattern.

Figure 3.1 Normal Distribution with Floor Effect



By creating an artificial dichotomy, the current study used a biserial correlational analysis that gave the best estimate of the bivariate correlation between the psychological

variables and treatment outcome. As further foundation for the decision to dichotomize the variables, an analysis of the variables as continuous showed the same pattern of correlations as when the variables were analyzed as dichotomous; however, once dichotomized, the correlations were strengthened (with the exception of Thought Problems which remained essential the same and Withdrawn) because the "floor effect" was removed. See table 3.6 for a comparison of the correlations between the psychological variables and treatment outcome as continuous and dichotomized.

Table 3.7 Comparison of Continuous and Dichotomized Correlations

Variable	**Continuous R**	**Dichotomized R**
Social Problems	.189*	.231**
Withdrawn	.067	.231**
Somatic Complaints	-.074	-.110
Anxious/Depressed	.124	.194*
Thought Problems	.048	.041
Attention Problems	.026	.061

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

3.2.3 *Multiple Regression*. Using the dichotomized variables, three were found to have a significant positive relationship with treatment outcome, therefore, a multiple regression analysis was conducted by combining two or more of these variables to examine whether predictive validity may be improved upon. Stepwise multiple regression was used because it employs both forward and backward selection and will therefore determine the most practical model. Based on the correlation analysis, both the Withdrawn variable and the Social Problems variable were the strongest positive bivariate predictors of treatment outcome. As such, either could have been entered first. The results indicated that regardless of which one was entered first, the Social Problems

variable was included and when combined with the constant variable resulted in a significant formula when alpha was set at .05. When the Withdrawn variable was added to the prediction formula, both the Withdrawn and Social Problems variables remained significant at the .05 alpha level, however, the constant variable was found to be significant at .053. Since the significance level of the constant variable was only slightly above the set alpha level of .05, increasing the chance for error by only .3%, it was decided to maintain the prediction formula using both the Social Problems variable and the Withdrawn variable. When the following highest correlation was entered, Anxious/Depressed variable, it was excluded from the equation. The remaining variables were entered in the following order of highest to lowest correlations: Somatic Complaints, Attention Problems, and Thought Problems. The results indicated that Somatic Complaints variable was included into the prediction formula with the other two dependent variables (Social Problems and Withdrawn) and the Attention Problems and Thought Problems variables were excluded. While the dependent variables included in the prediction formula were all significant at the .05 alpha level, the constant variable was no longer significant at the .05 alpha level when the somatic complaints variable was added. Table 3.6 illustrates the multiple regression analysis results for the included variables.

Table 3.8 Multiple Regression Results: Included Variables

Variable	R Square	Beta	Significance

(Constant) Social Problems	.053	4.233 5.310	$p < .05$ $p < .05$
(Constant) Social Problems Withdrawn	**.088**	2.997 4.398 3.796	$p = .053$ $p < .05$ $p < .05$
(Constant) Social Problems Withdrawn Somatic Complaints	.138	2.826 5.669 4.724 -5.669	$p > .05$ $p < .05$ $p < .05$ $p < .05$

- Bold type represents selected prediction formula.

By observing the above data, it was determined that the best prediction formula would include the Social Problems variable and the Withdrawn variable with the constant. When these two variables were included, the formula resulted in a $r^2 = .088$, indicating 8.8% of the variance in treatment outcome. Therefore the best prediction formula was determined to be as follows: Treatment outcome = constant + Beta (Social Problems score) + Beta (Withdrawn score) or Treatment outcome = 2.997 + 4.398(X) + 3.796(X).

3.3 Summary of Results

Three steps of analysis were used to determine whether child psychological variables were predictive of treatment outcome in the Early Skills Development Program. The present study determined that of the six psychological variables, Social Problems, Withdrawn, Anxious/Depressed, Somatic Complaints, Attention Problems, and Thought Problems, the inclusion of the Social Problems and Withdrawn variables resulted in the best prediction formula for treatment outcome.

Results from the independent samples t-test indicated that the mean difference in treatment outcome was found to be significantly different in participants with a T score of 60 or higher on the Withdrawn variable, the Anxious/Depressed variable, and the Social

Problems variable. No significant differences in treatment outcome were found for participants with a T score of 60 or higher on the Somatic Complaints variable, Attention Problems variable, and Thought Problems variable.

Additionally, when bivariate correlations between treatment outcome and the child psychological variables were conducted, the same three variables found to have significantly different means scores were also found to have significant correlations with treatment outcome. By reviewing both the independent samples t-test and correlational results, the findings reveal that these three variables each have a positive correlation with treatment outcome indicating that having a T score of 60 or higher on any of these scales results in a greater decrease in aggression.

Finally, multiple regression analysis confirmed that by combining the two highest correlations, a significant prediction formula could be attained. This prediction formula indicates that by combining the Withdrawn variable with the Social Problems variable, 8.8% of the variability in treatment outcome could be predicted.

Discussion

This section summarizes the research design of the present study, discusses the findings of the research questions under consideration and the implications of these findings. The limitations of the present study are presented and recommendations for future research are offered as they relate to the Early Skills Development Program.

4.1 Summary of Research Design

The purpose of this study was to determine if child psychological variables available through the existing data base were predictive of treatment outcome in the Early

Skills Development Program. The purpose of the Early Skills Development Program is to assist early school aged children with aggressive behaviours develop more appropriate social skills that will be transferred to the classroom, the home, and all aspects of their daily life. The Early Skills Development Program is based on cognitive behavioural and behavioural family therapy.

Data was collected on each child who participated in the Early Skills Development Program. For the purposes of this study, treatment outcome was determined by measuring the child's aggressive behaviour pre- and post-intervention using the Teacher Report Form of the Achenbach Child Behaviour Checklist, Aggressive Behaviour Rating Scale. In addition facilitators of the program collected data from the Teacher Report Form of the Child Behaviour Checklist, on the following scales: Withdrawn, Anxious/Depressed, Social Problems, Somatic Complaints, Attention Problems, and Thought Problems.

This study consisted of 172 participants. The participants attended elementary schools in North Battleford or Saskatoon, Saskatchewan. The data from these participants was evaluated to determine if the psychological variables (i.e., T score of 60 or higher of Withdrawn, Anxious/ Depressed, Social Problems, Somatic Complaints, Attention Problems, and Thought Problems) were predictive of treatment outcome in the Early Skills Development Program. Data analysis consisted of a comparison of the mean difference in the treatment outcome for each variable, an analysis of the bivariate relationship between treatment outcome and the psychological variables, and multiple regression.

4.2 Research Findings

Three steps of analysis were used to determine whether child psychological variables were predictive of treatment outcome in the Early Skills Development Program. The present study determined with multiple regression analysis that having a T score of 60 or higher on the Withdrawn and Social Problems scale predicts a decrease in aggression and resulted in a significant, though low, proportion of the variance in treatment outcome. Additionally, results from a comparison of the mean difference in treatment outcome and correlational analysis indicated that a T score of 60 or higher on the Anxious/Depressed scale is also significantly related to treatment outcome, although only moderately.

Overall these results confirmed a number of previous research findings. In the past, researchers have found that the socially withdrawn, unpopular child was more successful in their reduction of aggressive behaviour when treated in similar programs to the Early Skills Development Program. A child with a combination of withdrawn behaviour, social problems, and symptoms of anxiety and depression often presents with low likeability scores and an unpopular status with peers. Previous researchers have theorized that this combination of symptoms in the unpopular child may motivate this child to greater change than more socially accepted peers with less psychological issues. According to Phillips et al. (1997; Draft Copy), the popular aggressive children, unlike their counter parts, use aggression proactively (for personal gain and status, not reactively) and are rewarded continuously by positive reinforcement of praise and privileges.

The present study found that socially, withdrawn symptoms in a child predicts more positive treatment outcomes. This suggests that this type of participant may see the

program as a way to improve their life or a lifeline for something better. Moreover, symptoms of withdrawn, social problems, anxiety and depression may indicate that this child is more uncomfortable with their own aggression and more motivated to change (Lochman et al. 1985). Conversely, the popular aggressive child does not see the point in improving or changing a behaviour that is already working for him/her. Changing the aggressive behaviour of a child through rewards and social praise utilized in the Early Skills Development Program may be futile because it is competing with the rewards and social praise that they are receiving the rest of the time they are not participating in treatment. Attempting to reward a child for non-aggressive behaviour when their own aggression is already being rewarded would be futile.

4.3 Implications of Findings

The theory that the unpopular aggressive child has more to gain from decreasing their aggression and thus is more successful in treatment, suggests that an opposing program/paradigm must exist for the popular aggressive child who uses aggression to gain status and dominate others. This form of aggression, sometimes viewed positively by others (i.e., in sports such as hockey) and sometimes negatively (i.e., bullying), is in many ways the child's "source of influence and power" (Phillips et al. 1997, p.66). Therefore, the motivation behind the misbehaviour must be closely linked with the modification of misbehaviour. This is already a tenet of the Day treatment Program; however, with the current research more direct action may be taken to ensure the implementation of it.

In the Early Skills Development Program, the reduction of aggressive behaviour is accomplished by continuing positive reinforcement of the positive social skills that are

learned. For a discussion on what type of positive reinforcement is used refer to section 1.3.4 of study one. One possible alternative to the use of rewards only, may be to include use of consequences and punishment into the program. The quandary of this proposal is that both the unpopular and popular child will be receiving the change in treatment reinforcers which may also adversely affect the unpopular child who is already successful with the present treatment program.

Therefore, *potent reinforcers* may be required that are more valuable to the child than the reinforcers they are getting outside of treatment. For instance, a child who receives a sticker for not being aggressive in class in the morning may receive laughs from their peers for the same aggressive behaviour in the afternoon. To the popular child, the laughing and support from the peers may indeed be a more potent reinforcer than the item they are allowed to "buy" at the token economy "store". Just as every child is unique in their likes and dislikes, every child will also react differently to a variety of reinforcers whereby some reinforcers will be more potent than others. Given that each school term only a small number of children are targeted and accepted for treatment, the goal of refining and revising reinforcers for each group and individual child that goes through the program may be an attainable goal.

4.4 Limitations

While the findings are in keeping with previous research, the results, while significant, are only moderate. This suggests there are additional variables still accounting for a large proportion of the variance in the treatment outcome of the Early

Skills Development Program. As such, a notable limitation of the current work exists in the variables that are available for analysis. The present study was constrained by the extant data base available, based on the participant data gathered. For instance, there was a lack of data on positive psychological factors that have also been found to be predictive of treatment outcome. Information from the Child Behaviour Checklist could provide data for further analysis of these possible predictor variables: academic performance and learning, which have been shown to be related to poor prognosis of conduct issues (Kazdin & Crowley). Additional information regarding a child's IQ and self-esteem may also have resulted in improved prediction, as was indicated in previous studies.

As in study one, the results of the current study are restricted due to a lack of a control group. Previous research has stipulated that in order to determine the effects of a program, similar to the Early Skills Development Program, a study should include a control group (Golly et al., 2000). This limitation has been argued in previous evaluations of the Early Skills Development Program by both Headley (2000) and Leibel (2002). Brief consultation with a facilitator of this program indicated that the gathering of data from a control group is in progress.

4.5 Future Research

Future research may be benefited by resolving the above limitations. Additionally, as was mentioned in study one, the treatment outcome was defined by the pre- and post-test data using the Aggressive Behaviour Scale for reasons explained in section 3.1. However, one will recall that the Delinquent Behaviour Scale was also utilized by the facilitators of the program in determining the admittance and evaluation of each participant. Therefore, investigating the treatment outcome of participants in the Early

Skills Development Program using the Delinquent Behaviour Scale may be an alternative for future research.

Also discussed in study one, each participant's behaviour was rated prior to the intervention, after the ten week program, and then approximately every 4 to 40 weeks post-treatment across the years the program has been in existence. For the present study, treatment outcome was determined by evaluating participant data from immediately prior to and after treatment and did not include data collected across the intervals. Future research may include all post-treatment data when investigating predictive factors in the treatment outcome of the Early Skills Development Program.

In the above section on limitations, additional variables for study were discussed. For instance, the Child Behaviour Checklist could provide data on academic performance and learning. Additional information regarding a child's IQ and self-esteem may also result in improved prediction. Higher levels of self esteem have been found to be associated with less change and lover levels associated with greater improvement such that "boys with low self-esteem may have been much more receptive to even minimal attention and external structure" (Lochman et al., 1985, p.536). This would confirm and support the findings of the present study. Further variables to study include private speech, activity level, impulsivity, and attributions of causality. Copeland and Hammel (1981) indicated that the "cognitively more mature, more involved and cooperative, and more 'internal' children profit more from CSI (cognitive self instruction) training" (p. 416, parenthesis added).

Finally, a superfluous finding to the present study briefly indicated that the Early Skills Development Program not only significantly decreases aggressive behaviour,

measured by the Aggressive Behaviour Scale, but also a significant decrease was found among the remaining seven syndrome problem scales including: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, and Delinquent Behaviour. Further investigation of this finding would be beneficial to the program, as it may designate other children for treatment when there are not enough targeted children for treatment and/or at the very least reassure facilitators that by treating the aggressive child they are not adversely affecting them in other psychological domains.

4.6 Conclusion

In conclusion, the Early Skills Development Program has been found to be successful by three previous studies to significantly reduce the aggressive behaviour of its participants (Mykota, 1999; Headley, 2000; Leibel, 2002). However, Leibel (2002) also found that some participants indicated a greater decrease in aggression then others suggesting the need for an investigation into what variables predict treatment outcome.

The present study found that a T score of 60 or higher on the Withdrawn and Social Problems scales resulted in a significant prediction formula that accounts for 8.8% of the variability in treatment outcome of the Early Skills Development Program. Additionally, participants who had a T-score of 60 or higher on the Anxious/Depressed scale, as well as the Withdrawn and Social Problems scales, showed a significantly higher decrease in aggression than those who had a T score of 59 or lower. Overall, this indicated that children who showed symptoms of being withdrawn, having social problems, and the presence of anxiety and depression were benefiting from the Early Skills Development Program. One theory to account for this suggests that a child with

these internalizing syndromes may be more motivated to change than the child whose aggressive behaviour is not affecting them adversely on other psychological domains.

Nevertheless, the results, while significant, are only moderate and thus indicate that additional variables are also accounting for the variance in treatment outcome. Additional psychological variables were discussed in section 4.4 and 4.5 of the present study. As well, treatment factors and/or family demographic factors of the child (e.g., family status) may be accounting for the remaining variance in the treatment outcome of the Early Skills Development Program. Study three will be examining the family demographic variables available through the extant data base from the Early Skills Development Program to determine if these variables account any of the remaining variance in treatment outcome.

STUDY THREE: EXAMINING FAMILY DEMOGRAPHIC VARIABLES IN PREDICTING TREATMENT OUTCOME

Literature Review

1.1 Overview of Relevant Literature

The following provides a brief overview of aggression, the treatment of aggression, and the Early Skills Development Program, including previous evaluations. For further discussion of these areas, the reader is referred back to sections 1.1 through 1.4 of study one.

1.1.1 Treatment of Aggression. A review of the literature indicates that childhood aggression is a behaviour that remains stable over time, in fact increasing risk for additional problem behaviours in adolescence, and early intervention appears to yield the best results in dealing with the trajectory of aggression ((Lochman, 1990; Lochman et al., 1989; Golly et al., 2000). Early intervention using Cognitive Behavioural Therapy and Behavioural Family Therapy has been shown to be efficacious. The goal of Behavioural Family Therapy is to reduce parents' aversive and controlling behaviour and increase the use of social reinforcement, while Cognitive Behavioural Therapy attempts to reduce cognitive distortions and deficiencies in the child that maintain the aggressive behaviour (Lochman, 1990).

Several interventions incorporate the theories that underlie Cognitive Behavioural Therapy and Behavioural Family Therapy. For instance, a program, "Think Aloud", was designed to specifically increase self-control in aggressive six to eight year old boys (Camp et al., 1977). Additionally, the Anger Coping program was developed based on these techniques and is uniquely incorporated into the school setting (Lochman et al., 1989). While this type of intervention has been found effective, not all children improve (Lochman et al., 1989).

1.1.2 Early Skills Development Program. The Early Skills Development Program is based on a foundation of Cognitive Behavioural Therapy and Behavioural Family Therapy. The purpose of the Early Skills Development Program is to assist children who have persistent aggressive behaviour develop acceptable social skills that will put them at a decreased risk for social problems including rejection and/or neglect (Child and Youth Services, 2002).

Data was collected on the participants of the Early Skills Development Program, including demographic information, psychological syndromes, and evaluation of the child's aggressive behaviour pre- and post-intervention. Psychological syndromes and the evaluation of aggressive behaviour were measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist.

Evaluations of the efficacy of the Early Skills Development Program have been conducted since the program's commencement. Initially, Mykota (1999) evaluated the Early Skills Development Program and reported significant positive effects on the aggressive behaviour of participants after treatment, as well as over time, at least two and four months after the intervention. The second evaluation, by Headley (2000), examined the effectiveness of the Early Skills Development Program based on four scales: Aggressive Behaviour, Delinquent Behaviour, Social Problems, and Attention Problems and found statistically significant differences between pre- and post-test means that suggest, quantitatively, the effectiveness of the program in improving skills in these four areas.

Similar to the previous two evaluations, Leibel (2002) determined "there were decreases in child's aggressive and/or violent behaviour as a function of participating in

the Early Skills Development Program, which over a three-year period lead to a decrease in negative behaviour in school" (p.81). In addition, the targeted children's behaviour showed stability after the program, neither decreasing further nor increasing back to pre-treatment levels.

While Leibel (2002) found statistically significant deceases in aggression, many children remained in the at-risk range on the Teacher Report Form of the Child Behaviour Checklist, while a few showed decreases of aggressive behaviour into the normal range. That some children showed greater improvement over others suggests the need for examination of the predictive variables that affect various treatment outcome in the Early Skills Development Program. Predictive variables may include demographic factors, psychological factors, and/or family demographic factors.

Study one investigated the demographic variables available in the extant data base to determine if they were predictive of treatment outcome. These demographic variables included: age, gender, diagnoses of behaviour and/or mood disorder, and psychotropic medication status. The results of this study indicated that none of these demographic factors were predictive of treatment outcome in the Early Skills Development Program. Several limitations, including sample sizes, may have affected the results.

Study two investigated the psychological variables available in the extant data base to determine if they were predictive of treatment outcome. The psychological variables available for analysis included the syndrome scales from the Teacher Report Form of the Child Behaviour Checklist: Withdrawn, Anxious/Depressed, Somatic Complaints, Social Problems, Thought Problems, and Attention Problems. Results indicated that children who showed symptoms of being withdrawn, having social

problems, and the presence of anxiety and depression showed increased benefit from the Early Skills Development Program.

1.2 Family Demographic Variables Affecting Treatment Outcome

As was previously mentioned in study one, it is important to understand not only if a particular treatment is effective overall but why and with whom is it most effective. Results from predictive studies will direct clinicians and practitioners toward providing treatment to those who will most benefit, finding alternative therapy for those clients who need something different, or possibly supplementing existing treatments for those who need something more, all in order to improve overall treatment effectiveness.

What follows is a discussion of the literature that specifically examines *family demographic variables* that may be predictive of treatment in aggressive children. Individual child characteristics operate within parent, family, and contextual influences and as such are likely to affect treatment outcome. Kazdin and Crowley's (1997) research suggests that several parent, family, and contextual influences including family income, parent on social assistance, parent history of antisocial behaviour and adverse child rearing practices, in addition to the significant child characteristics predicted outcome in cognitive behavioural-based treatment.

Extensive literature exists that examines predictive variables in psychiatric treatment. For example, Pfeiffer and Strzelecki (1990) conducted a review of predictor variables for children and adolescents in residential psychiatric treatment. Their review suggests that of the 34 articles evaluated, ten predictor variables were found. Relevant factors include: family functioning and aftercare/post-discharge environment. Results suggest that both factors are positively related to treatment outcome.

Considerably less research has been completed examining the specific predictor variables in cognitive-behavioural and behavioural family treatment with aggressive children. However, much information can be gathered based on the literature that does exist. As was previously discussed, to a large extent the treatment used with aggressive children has been Cognitive Behavioural Therapy, Behavioural Family Therapy, or a combination of the two. Similarly, research on the predictive factors of treatment outcome focuses on treatment used with the child or adolescent directly or through parent training therapy whereby the parent(s) participates in behavioural family therapy and learns cognitive behaviour modification skills for treating his/her aggressive child. As such, this research specifically identifies child contextual variables such as parent and family variables that may influence or predict treatment outcome.

Ansari, Gouthro, Ahmad, and Steele (1996) examined the effects of a behavioural modification program in an inpatient treatment facility with adolescents with conduct problems. Among other factors, Ansari et al. explored whether the presence of the father in the child's life would affect treatment outcome. Results suggest that a positive treatment outcome was predicted by the father's presence.

More specific research has focused on predictive factors in parent training alone. Literature suggests that a number of factors are related to a parent's ability to influence their child's aggressive conduct problems when participating in parent training programs. These factors include parent psychological or personal adjustment, inter-parental factors, adaptive factors, and extra-familial/contextual factors such as family support and resources.

Webster-Stratton and Hammond (1990) examined parent depression, marital status and adjustment, socioeconomic status, and amount of negative life experiences, to determine the predictive validity these factors have in a parent training program for aggressive children. An important finding was that significant predictive factors were dependent on the criteria used to evaluate treatment outcome. As well, depending on when the evaluation occurred, either one month or one year following treatment, the significance level of the predictive factors changed. For instance, marital adjustment or marital satisfaction in fathers was more predictive at one month while socioeconomic status in fathers was more predictive at one year. Overall, results indicated that depression, amount of negative life stress, the combination of socioeconomic status and marital status with mothers, and marital adjustment and socioeconomic status with fathers, were predictive of child treatment outcome (Webster-Stratton & Hammond).

Kazdin and Wassell (2000) also examined parent, family, and contextual predictive factors that could be related to preventing change in treatment with aggressive, oppositional, and antisocial children. Kazdin and Wassell suggest that families often experience barriers that prevent them from participating in treatment fully thus resulting in poorer treatment outcome. "Salient barriers include obstacles associated with participation, perceptions that treatment is demanding, perceptions that treatment is not highly relevant to the child's problem, and a poor relationship or alliance with the therapist" (Kazdin & Wassell, p. 28). Kazdin and Wassell examined two domains of predictive factors that could potentially affect treatment outcome: parent psychopathology and stress and parent quality of life and resources for support. These domains of predictors reflected two opposing factors: dysfunction and adversity. Child

severity of impairment was also examined to determine whether it would influence response to treatment using a cognitive problem-solving skills training and parent management training. Results indicated that "lower level of parent psychopathology and stress, greater parent quality of life and support, and less severe child dysfunction at pre-treatment predicted greater therapeutic change among children" (Kazdin & Wassell, p.35). Conversely, socioeconomic disadvantage was not found to predict treatment outcome. With regards to perceived barriers to treatment participation, Kazdin and Wassell found as the level of perceived barriers to treatment increased, the positive treatment outcome decreased.

Kazdin and colleagues have been operating much of their research under a "barriers to treatment model" which suggests that families may experience barriers, such as perceptions that treatment is demanding and a poor relationship with therapist, that effect positive treatment outcomes. Results from Kazdin and Wassell's (1999) research suggest that socioeconomic disadvantage, parent psychopathology, and stress in addition to child dysfunction may predict therapeutic change. As well, barriers to participation in treatment were also significantly associated with therapeutic change and interestingly this was not explained by family, parent, and child predictors found earlier. Moreover, "as the level of perceived barriers to participation in treatment increased among families, the amount of therapeutic change and the proportion of cases that made a marked change decreased" (Kazdin & Wassell, p. 169). Conversely, when there were low levels of perceived barriers to treatment, children at risk for negative treatment outcome (based on parent, family, and child predictors) showed more positive treatment outcome, such that low perception of barriers appears to serve as a protective factor.

Dumas and Wahler (1983) found that the more isolated and socioeconomically disadvantaged the mother was the less effective the parent training. Epidemiological studies have shown that oppositional children, often characterized as aggressive, tend to come from families with descriptions of poverty, lack of education, parental discord or depression, and overcrowding and "outcome research suggests that when disadvantaged families bring their children to therapy they are likely to fail or drop out" (Dumas & Wahler, p. 302). Dumas and Wahler defined socioeconomic disadvantage as adverse socioeconomic status indicators that fall under income, education, area of residence in a city, family composition and family size, and by source of referral. Mother insularity was defined in the context of both the quantity and quality of a persons extra familial contacts. Insular mothers generally report that most of their contacts are unsolicited and involve coercive approaches by extended family members and/or social service agents (e.g., mother insularity equals community isolation and social coercion) (Dumas & Wahler).

Dumas and Wahler (1983) investigated a parent training program that involved time out and token economy, essentially a behaviour management system of punishment and reward. Specifically, Dumas and Wahler found that three of the six socioeconomic status measures accounted for a significant amount of variance in treatment outcome. These included family income, family composition, and area of residence. Results also indicated that overall socioeconomic disadvantage and insularity showed the greatest variability or most significantly predicted parent training outcome.

Webster-Stratton (1992) examined treatment outcome using a parent training videotape. Compared to the control group, the parents who had been administered the videotape which modeled the parent training program's skills showed improvements in

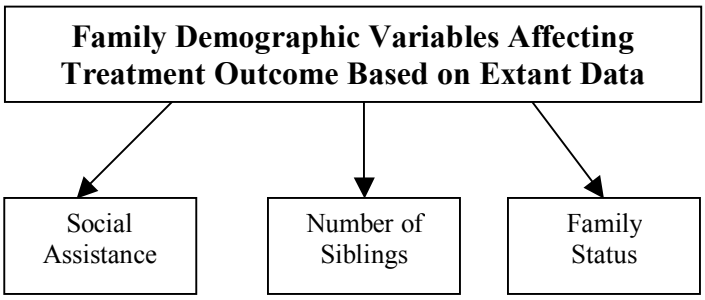
parenting strategies. As well, children showed improvements in conduct problems. Parents were able to maintain the learned strategies and continued improvement in the child's behaviour was noted at a one-year follow up. In addition to the efficacy of the program, several predictive factors were noted in treatment outcome. Webster-Stratton's study indicated that single mother status, maternal depression, and mother's mental age were related to a negative parent treatment outcome. As well, social class appeared to influence both the mother's parenting strategies (mothers became more critical) and increased child deviance (Webster-Stratton). For fathers, an increase in child deviance appeared to be influenced by negative life stress and depression (Webster-Stratton).

1.3 Summary

While the initial research on Cognitive Behavioural Therapy and Behavioural Family Therapy with aggression has shown its efficacy, results are mixed indicating there is a need for more refined research questions that concern the characteristics of children and the familial context. It is important to identify family demographic variables in predicting successful treatment outcome in order to enhance our understanding of how a treatment operates, as well as which children are most likely to benefit and which would be better served by alternative treatments that perhaps have a larger family component to the therapy. The preceding discussion outlined much of the existing literature on family demographic variables that are predictive in treatment outcome with aggressive children using cognitive behavioural therapy, behavioural family therapy, or a combination of both. However, a notable limitation of this study exists with the variables that can be examined. This study is constrained by the extant data base available, based on the participant data gathered. Thus, it is only possible to conduct an analysis of those

variables for which there is data available. The following table illustrates which family demographic variables from the literature are available for analysis based on the existing data set of the Early Skills Development Program.

Figure 1.1 Family Demographic Variables



1.4 Research Statement

The objective of this research study is to determine what family demographic variables will predict treatment outcome in the Early Skills Development Program, an early intervention program that uses cognitive behavioural therapy and behavioural family therapy to decrease aggression in young school aged children. These variables are called predictor variables. This will be examined through an analysis of the Early Skills Development Program. Based on previous research and extant data available from the Early Skills Development Program, the general research hypothesis in this study is:

Certain family demographic variables will predict behaviour change on the Aggressive Behaviour Scale of the Teacher Report Form on the Achenbach Child Behaviour Checklist immediately following treatment in children who have received treatment in the Early Skills Development Program.

The following questions will be examined specifically:

1. Research indicates that socioeconomically disadvantage parents are less responsive to parent training and thus are predictive in child treatment outcome (Kazdin & Wassell, 1999, Dumas & Wahler, 1983). If the parent(s) are on *social assistance*, does this socioeconomic status predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?
2. Previous studies indicate that family composition (i.e., presence of father and/or mother) accounted for a significant amount of variance in treatment outcome (Dumas & Wahler, 1983). Therefore, will the *presence of siblings* predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?
3. As well, based on Dumas & Wahler's (1983) findings, will *family status* (i.e., single or dual parent home or foster home placement) predict behaviour change on the Aggressive Behaviour Scale immediately following treatment in the Early Skills Development Program?

Methodology

2.1 Group Selection

Data was collected from students in seven schools in North Battleford and six schools in Saskatoon who had participated in the Early Skills Development Program from

September of 1997 in North Battleford and from January 1998 in Saskatoon to June 2003 in both sites. The Early Skills Development Program is a school and home based program for severely aggressive 5 to 6 year olds. The program is based specifically on cognitive behavioural interventions but includes some behavioural family interventions as well to improve generalizability of treatment behaviour. Students were selected based on their teachers identifying them as presenting with continual aggression or violent behaviours. Teachers were required to complete the Child Behaviour Checklist-Teacher Report Form. Students were eligible for the Early Skills Development Program if their scores from the Teacher Report Form- Aggression Problem Scale and/or Delinquent Behaviour Scale- were equal to or exceeded a cut off T-score of 60.

2.2 Participants

Participants from the Early Skills Development Program ranged in age between four and seven years when they started the program and would currently be between eight and eleven years of age. There were 172 participants available with the majority being male. Data had been collected with regard to change in behaviour, rated using the Teacher Report Form, and with regards to demographic information in order to investigate possible predictor variables. Demographic variables included: (a) number of siblings, (b) family status, and (c) whether the child's family was on social assistance.

2.3 Instrumentation

Evaluation of participants' aggressive behaviour pre- and post-intervention was measured using the Teacher Report Form of the Achenbach Child Behaviour Checklist-Aggressive Behaviour Scale. Research findings support the use of teacher rating scales as

both valid and reliable measures for the assessment of psychological and behavioural problems (Sattler, 1992). This is thought to be a result of the standardized environment teachers work in and the variety of students to whom they can compare a students' school performance, adaptive functioning, and problem behaviour (Sattler, 1992).

The Teacher Report Form was used at the beginning of the Early Skills Development Program to evaluate if participants would be accepted into the program. The Teacher Report Form was subsequently used to evaluate the participants' behaviour at the conclusion of the ten-week program and across several intervals succeeding the program up until approximately grade two or three years post the first evaluation. Only pre-test and post-test data that was taken immediately prior to and immediately following intervention will be utilized in the analysis of the data to determine if particular family demographic variables are useful in the prediction of treatment outcome. Since it is not the goal of this study to examine generalizability, it is beyond the scope of the analysis to examine the follow-up evaluations that have been conducted with each participant at subsequent intervals following treatment.

The Child Behaviour Checklist-Teacher Report Form was developed by Achenbach (1983) and is a rating scale that is intended to obtain information regarding problem behaviour syndromes. The Teacher Report Form also provides scales for adaptive behaviour and school performance. The Teacher Report Form has 113 items. Eight clinical scales are provided: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, and Aggressive Behaviour.

2.4 Procedure

Participants of the Early Skills Development Program were identified, by teachers, as presenting with severe and continuous aggressive behaviour. Teachers rated the children on the Teacher Report Form in order to determine the participant's eligibility for the program (see Appendix C). If the child scored a T-score of 60 or higher on the Aggressive and/or Delinquent Behaviour Scale, they were admitted into the program. While the treatment outcome can be evaluated using pre- and post-test data from either the Aggressive and/or Delinquent Behaviour Scale, for the purposes of this study, the pre- and post-test data from the Aggressive Behaviour Scale was selected. This was based on the finding that 97.1% of participants in the program could have been admitted based on their T-score of 60 or higher on the Aggressive Behaviour Scale.

Facilitators from the program gathered demographic data from each participant including: number of siblings, family status (dual or single parent, or foster placement), and whether the family was on social assistance. Additional demographic data not relevant to this particular study was also gathered, including: the child's age, gender, diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), and whether the child was on psychotropic medication.

After permission was gained from parents, children went through a ten week cognitive behaviour skills training. The parents were also involved in a parent training component. The ten-week cognitive behaviour skills training program is called the Early Skills Development Program. The Early Skills Development Program was described previously and therefore will not be repeated. Readers are referred to section 1.3 for more

information. At the end of the ten weeks, teachers were required to complete a Teacher Report Form.

2.5 Data Analysis

The following family demographic variables were examined to determine their predictive validity in the treatment outcome of the Early Skills Development Program: number of siblings, family status (dual or single parent, or foster placement), and whether the family was on social assistance. To ascertain if these variables were predictive of treatment outcome, a series of steps was required for statistical analysis. The analysis of the present study involved the calculation of frequencies, means, standard deviations, standard error of the mean, equality of variances, independent sample t-tests, correlations, and multiple regression. Statistical analyses of the data were computed using the SPSS computer program.

First, treatment outcome was determined for each participant in the Early Skills Development Program through the teacher ratings on the Child Behaviour Checklist-Teacher Report Form using the pre- and post-test scores of the Aggressive Behaviour Rating Scale. Specifically, the variable "treatment outcome" was created by subtracting pre-test from post-test scores. Treatment outcome is the dependent/criterion variable or the difference between pre- and post-test evaluations on the Aggressive Behaviour Rating Scale of the Teacher Report Form of the Child Behaviour Checklist. The independent/ predictor variables included the demographic variables.

Treatment outcome was used in computing an independent sample t-test to determine whether the difference in treatment outcome for each variable was significant. An independent sample t-test was first employed because the family demographic

variables (i.e., no siblings versus siblings) are independent samples being compared based on the treatment outcome to determine if there is a significant difference between the mean scores for the two groups. A significant difference would suggest the possibility of one group being a better predictor over the other. Correlations with all the family demographic variables were then computed to determine the bivariate relationship with the treatment outcome variable. Finally, to determine if predictive validity could be increased by combining two or more independent or predictor variables, a multiple regression statistical analysis was computed.

Results

The purpose of this study was to determine whether family demographic variables were predictive of treatment outcome in the Early Skills Development Program, which uses cognitive behavioural treatment for aggressive behaviour in Kindergarten and Grade One children. The results of this study are outlined in this section. The first section outlines the descriptive statistics analyzed including the examination of the quality of the data and the creation of new variables. An in-depth analysis of the proposed predictive variables is then presented including a comparison of means, correlations to determine the bivariate proportion of variance accounted for, and multiple regression to determine if combining more than one variable would increase predictive validity.

4.1 Descriptive Analysis

To begin with, the quality of the data was examined to determine whether each proposed variable was suitable for analysis and to make changes if they were not. Two

steps were involved in this: frequency of variables and the creation of new categorical variables. Each variable was examined for the frequency of the variables as they existed in the original data. The following table illustrates these frequencies.

Table 3.1 Frequencies Based on Extant Data Base

Factor	Variable	Frequency	Percentage
Number of Siblings	Zero	36	20.9
	One	42	24.4
	Two	50	29.1
	Three	23	13.4
	Four	11	6.4
	Five	1	.6
	Eight	1	.6
	Total	164	95.3
	Missing	8	4.7
Family Status	Single Parent	80	46.5
	Dual Parent	75	43.6
	Foster Parent	4	2.3
	Single Guardian	5	2.9
	Dual Guardian	4	2.3
	Total	168	97.7
	Missing	4	2.3
Social Assistance	Not on Assistance	115	66.9
	On Assistance	48	27.9
	Total	163	94.8
	Missing	9	5.2

For each variable, a dichotomy existed or was assumed. For example, Social Assistance automatically necessitated two dichotomous categorical variables: the participant's family was either on social assistance or not. With the other three variables, a dichotomy was created for the purposes of analysis. The frequency of each variable assisted with the creation of new categorical variables. With Family Status, categorical variables were combined or eliminated given the low frequencies of foster parent, single

guardian, and dual guardian. Single guardian was combined with single parent status and dual guardian with dual parent status. Given that only four participants were presently residing with foster parents, this categorical variable was eliminated. Therefore, two categorical variables under the factor Family Status were created for comparison purposes: Dual and Single Guardian.

Finally, for Number of Siblings, categorical variables were combined to create a dichotomy for comparison. All participants that had one or more siblings were combined to create a categorical variable called Siblings. The remaining participants were left in a categorical variable called Zero Siblings. As such, two categorical variables remained to be compared: participants with zero siblings and participants with siblings.

The following table illustrates the creation of the new categorical variables for analysis and their frequencies.

Table 3.2 Frequency of Categorical Variables for Data Analysis

Factor	Categorical Variable	Frequency	Percentage
Sibling Status	Zero Siblings	36	20.9
	Siblings	128	74.4

	Total	164	95.3
	Missing	8	4.7
Family Status	Single Guardian	85	49.4
	Dual Guardian	79	45.9
	Total	168	95.3
	Missing	4	2.3
	Excluded (foster)	4	2.3
Social Assistance	Not on Assistance	115	66.9
	On Assistance	48	27.9
	Total	163	94.8
	Missing	9	5.2

The final variable to be created was the dependent variable "treatment outcome". Participants were accepted into the Early Skills Development Program based on a T-score of 60 or higher on either the Aggressive or Delinquent Behaviour Scales. Therefore, treatment outcome could be based on the mean difference between pre- and post-test data from either scale. However, by comparing the frequency of participants who were accepted into the program with either the Aggressive Behaviour Scale or the Delinquent Behaviour Scale a decision was made to use only the Aggressive Behaviour scale pre- and post-test scores in determining treatment outcome. Additionally, the objective of this study was to determine what variables are predictive in the treatment of aggression, not delinquency. Therefore, it is logical to use a treatment outcome that is based on the purest measure of the behaviour. The following tables display the number of the participant accepted to the program based on the Aggressive Behaviour Scale versus the Delinquent Behaviour Scale.

Table 3.3 Participants Accepted Based on Aggressive Behaviour Scale

T- Score	Frequency	Percent
≥ 60	167	97.1

≤ 59	5	2.9
Total	172	100.0
Missing	0	0.0

Table 3.4 Participants Accepted Based on Delinquent Behaviour Scale

T- Score	Frequency	Percent
≥ 60	146	84.9
≤ 59	26	15.1
Total	172	100.0
Missing	0	0.0

Using the pre- and post-test scores from the Aggressive Behaviour Scale to determine the treatment outcome of each participant targeted the objective of this study by examining the prediction of aggression using the purest measure possible. As well, using the Aggressive Behaviour Scale includes 97.1% of participants in the sample. If one were to use the Delinquent Behaviour Scale only 84.9% of participants would be under investigation. Therefore, it was more rational to use the treatment outcome that includes the greater number of participants.

Using the Aggressive Behaviour Scale, treatment outcome was based on the difference between pre- and post-test data. From the 172 participants a range of differences in treatment outcome was observed. The following table illustrates these differences in treatment outcome and the frequency with which they occur.

Table 3.5 Descriptive Analysis of Treatment Outcome

Treatment Outcome	Frequency	*Percent*
-23	1	*.6*

-20	2	*1.2*
-16	1	*.6*
-15	1	*.6*
-14	1	*.6*
-11	1	*.6*
-10	1	*.6*
-9	1	*.6*
-8	1	*.6*
-7	3	*1.7*
-5	2	*1.2*
-4	2	*1.2*
-2	3	*1.7*
-1	7	*4.1*
0	7	*4.1*
1	3	*1.7*
2	4	*2.3*
3	9	*5.2*
4	7	*4.1*
5	6	*3.5*
6	13	*7.6*
7	9	*5.2*
8	6	*3.5*
9	5	*2.9*
10	7	*4.1*
11	7	*4.1*
12	5	*2.9*
13	6	*3.5*
14	7	*4.1*
15	5	*2.9*
16	1	*.6*
17	7	*4.1*
18	5	*2.9*
19	4	*2.3*
20	6	*3.5*
21	4	*2.3*
22	2	*1.2*
23	1	*.6*
24	1	*.6*
25	2	*1.2*
26	2	*1.2*
27	1	*.6*
28	1	*.6*
31	1	*.6*
39	1	*.6*
Total	*172*	*100.0*

Once the new categorical variables were created and the data was suitable for examination, three different stages of data analysis occurred. The following presents each stage of data analysis.

4.2 Data Analysis

In determining whether the family demographic variables were predictive of treatment outcome in the Early Skills Development Program, three stages were involved in the statistical analysis. A comparison of the means was conducted using an independent samples t-test. Correlations were also computed to examine the bivariate relationships of each of the family demographic variables with treatment outcome. Finally, a multiple regression analysis would follow to determine whether combining the variables would generate improved predictive validity of the treatment outcome.

4.2.1 *Comparison of Means*. Each variable was examined using an independent samples t-test. For two of the three variables under consideration, no significant results were found when they were compared based on treatment outcome. For the sibling status variable, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of participants who with zero siblings ($\underline{M}$ = 12.08, $\underline{SD}$ = 10.72) with that of participants who had one or more siblings ($\underline{M}$ = 7.52, $\underline{SD}$ = 9.35). The alpha level was set at .05. This test was found to be statistically significant, $t(162) = 2.50$, $p < .05$, indicating that participants who did not have any siblings demonstrated less aggression after treatment, as measured by the Child Behaviour Checklist, then those participants who had siblings.

For the family status variable, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of single guardianship ($\underline{M}$ =

8.48, SD = 9.35) with that of dual guardianship (M = 8.24, SD = 10.46). This test was found to be statistically nonsignificant (alpha of .05), indicating no difference between participants with dual and single guardianship in treatment outcome in the Early Skills Development Program.

Finally, for the social assistance variable, an independent samples t-test was conducted comparing the mean difference in the treatment outcome of participants who's families were not on social assistance (M = 8.58, SD = 9.84) with that of participants who's families were receiving social assistance (M = 8.21, SD = 9.86). The comparison between those on social assistance and those not, found statistically nonsignificant results (alpha of .05), indicating no difference in the treatment outcome of children who's family received social assistance when compared to those who did not. It should be noted that and increased alpha level of .10 resulted in the same nonsignificant findings for family status and social assistance.

4.2.2 Correlations. While the categorical variables belonging to only one variable were found to be significantly different, by conducting a correlational analysis it was possible to determine the extent of bivariate relationships with treatment outcome. The correlations between the dependent variable (treatment outcome), as measured by the Child Behaviour Checklist-TRF Aggressive Behaviour Scale, and the independent categorical variables belonging to sibling status, family status, and social assistance are displayed in Appendix D.

By observing the relationships between the variables, it was apparent that the zero siblings' variable had the strongest positive correlation with treatment outcome. Therefore, since $r = .193$ and $r^2 = .037$, for treatment outcome, 3.7% of the variability was

due to the correlation between no siblings and treatment outcome. One other variable was also found to be significantly correlated to treatment outcome, albeit negatively. For participants with one or more siblings, where $r = -.193$ and $r^2 = .037$, for treatment outcome, 3.7% of the total variability was due to the correlation with participants who had one or more siblings. While two variables were found to be significantly correlated they are essentially telling the same results as they are a dichotomy of one another and are fundamentally speaking to the same issue, which is that sibling status was predictive of treatment outcome, where having no siblings is positively predictive and having siblings in negatively predictive. None of the remaining categorical variables belonging to the variables family status and social assistance, presented with significant correlations to treatment outcome.

4.2.3 *Multiple Regression*. Since only one predictive variable yielded a significant bivariate relationship with treatment outcome, proceeding with a multiple regression analysis was unlikely to result in a significant prediction formula. However, to be absolutely certain a multiple regression analysis was conducted. A stepwise multiple regression was used because it employs both forward and backward selection and will therefore determine the most practical model. Based on the correlation analysis, having zero siblings had the strongest correlation with treatment outcome and was therefore entered into the equation first. The two highest correlations were entered as follows, having siblings and single parent status. Both variables were excluded from the analysis due to the low correlations, indicating that a combination of predictor variables would not improve predictive validity.

4.3 Summary of Results

Three steps of analysis were used to determine whether family demographic variables were predictive of treatment outcome in the Early Skills Development Program. The present study determined that sibling status was predictive of treatment outcome in this particular intervention; however, the remaining two variables, social assistance and family status, were not. Results from the independent samples t-test indicated that the categorical variables belonging to sibling status differed significantly from one another in treatment outcome. Specifically, the presence of zero siblings indicated a greater decrease in aggression after treatment outcome. Particular limitations in the data set may have affected the results of the remaining variables. These limitations and suggestions for future research with the current data set will be discussed in the following section.

Additionally, when bivariate correlations between treatment outcome and the family demographic categorical variables were conducted significant results were found with the sibling status. The highest positive significant relationship between treatment outcome and these dependent variables was found with zero siblings ($r = .193$ and $r^2 = .037$). Therefore, the highest bivariate correlation with treatment outcome indicated that only 3.7% of the variance in treatment outcome was attributed to participants with no siblings.

Finally, while the proposed predictor variables yielded only one significant bivariate relationship with treatment outcome, a multiple regression analysis was performed to be certain that combining the variables would no produce a prediction formula. The additional categorical variables of social assistance and family status, when added in the stepwise analysis to zero siblings, were excluded. Therefore, the combination of categorical variables did not produce a significant prediction formula.

Discussion

This section summarizes the research design of the present study, discusses the findings of the research questions under consideration and the implications of these findings. The limitations of the present study are presented and recommendations for future research are offered as they relate to the Early Skills Development Program.

4.1 Summary of Research Design

The purpose of this study was to determine if the family demographic variables available through the existing data base were predictive of treatment outcome in the Early Skills Development Program. The purpose of the Early Skills Development Program is to assist early school aged children with aggressive behaviours develop more appropriate social skills that will be transferred to the classroom, the home, and all aspects of their daily life. The Early Skills Development Program is based on cognitive behavioural and behavioural family therapy.

Data was collected on each child that participated in the Early Skills Development Program. For the purposes of this study, treatment outcome was determined by measuring the child's aggressive behaviour pre- and post-intervention using the Teacher Report Form of the Achenbach Child Behaviour Checklist, Aggressive Behaviour Rating Scale. In addition to the Teacher Report Form of the Child Behaviour Checklist, facilitators of the program collected demographic data about each child, including the whether the child's family was on social assistance, family status (dual or single guardianship), and sibling status (presence of siblings).

This study consisted of 172 participants. The participants attended elementary schools in North Battleford or Saskatoon, Saskatchewan. The data from these participants was evaluated to determine if the demographic variables: social assistance, family status, and sibling status, were predictive of their treatment outcome in the Early Skills Development Program. Data analysis consisted of a comparison of the mean difference in the treatment outcome for each categorical variable, an analysis of the bivariate relationship between treatment outcome and the categorical variables, and multiple regression.

4.2 Research Findings

Results from the statistical analysis of the current study indicated that participants who had no siblings showed a significantly greater decrease in aggression following treatment compared to participants with siblings. No significant differences were found when the mean differences between treatment outcomes of the following categorical variables were compared: families on social assistance and families not on social assistance, and single and dual guardianship. Bivariate correlational analysis yielded similar results, where a significant (although low) positive relationship was found between zero siblings and treatment outcome. The same relationship, although negative, was found between participants who had siblings and treatment outcome. Both results indicated that 3.7% of the proportion of variance in treatment outcome was found based on sibling status. Finally, the multiple regression analysis indicated that even when the above categorical variables were combined a significant prediction formula was not found.

4.3 Implications of Findings

The finding that sibling status accounts for a proportion of the variance in treatment outcome has some implications for program enhancement or alteration at this time; however, readers should be cognizant of the low correlations and the limitations of the results. Specifically, while the correlation was significant it was relatively low suggesting that there may not be as much *practical significance*. Nevertheless, the findings suggest that participants who have siblings will not do as well in the Early Skills Development Program as their counterparts.

Based on previous research, what this may be recognizing is the negative influence of participants' siblings on their treatment. It is well understood that a child's cognitions and behaviours do not operate in a vacuum. The Early Skills Development Program recognizes this through its family component in treatment. What may be needed is a more direct focus on the other siblings in the home. For instance, when a child is targeted for treatment and the guardians agree to participation, part of that participation may include the assessment of any additional siblings who are school aged and residing in the home. If other siblings are found to have aggressive behaviour problems it may be beneficial to include these siblings as targeted children in the program.

On the other hand, there may be siblings residing in the home that present with no significant aggressive problems yet may still be affecting the targeted aggressive child's treatment. For instance, the siblings may be reinforcing the aggressive behaviour of the targeted child in a way that is more powerful then the behaviour modification system used in treatment. As was suggested in study one, *potent reinforcers* may be required that are more valuable to the child then the reinforcers they are getting outside of treatment, i.e. from siblings. Just as every child is unique in their likes and dislikes, every child will

also react differently to a variety of reinforces whereby some reiforcers will be more potent than others. Given that each school term only a small number of children are targeted, the goal of refining and revising reinforcers for each group and individual child that goes through the program may be an attainable goal.

4.4 Limitations

A notable limitation of the current work exists in the variables that can be examined. The present study was constrained by the extant data base available, based on the participant data gathered. Thus, it was only possible to conduct an analysis of those variables for which there was data available. There may be family demographic variables not available in the extant data base that would account for the variance in the treatment outcome. For instance, results from previous studies suggested that a positive treatment outcome was found to be predicted by the father's presence. Additionally, factors found to be predictive of treatment outcome in similar programs include the parent psychological or personal adjustment, inter-parental factors, adaptive factors, and extra-familial/contextual factors such as family support and resources.

Moreover, because of the limited data available the way in which the variables were defined may have affected the results. Like the current study, some research has found socioeconomic disadvantage was not predictive of treatment outcome (Kazdin & Wassell, 2000). However, Dumas and Wahler (1983) defined socioeconomic disadvantage as a multitude of adverse socioeconomic status indicators that fall under income, education, area of residence in a city, family composition and family size, and by source of referral, they found that three of the six socioeconomic status measures accounted for a significant amount of variance in treatment outcome. These included

family income, family composition, and area of residence. Results also indicated that overall socioeconomic disadvantage and insularity showed the greatest variability or most significantly predicted *parent training outcome*.

This raises another limitation. Evaluation of the child's treatment outcome may also be measured through a parent/family component. Webster-Stratton (1992) found that, compared to the control group, the parents receiving treatment showed improvements in parenting strategies. As well, the children showed improvements in conduct problems. Parents were able to maintain the learned strategies and continued improvement in the child's behaviour was noted at a one-year follow up.

Finally, the results of the current study are restricted due to a lack of a control group. Previous research has stipulated that in order to determine the effects of a program, similar to the Early Skills Development Program, a study should include a control group (Golly et al., 2000). This limitation has been argued in previous evaluations of the Early Skills Development Program by both Headley (2000) and Leibel (2002). Brief consultation with a facilitator of this program indicated that the gathering of data from a control group is in progress.

4.5 Future Research

Future research may be benefited by resolving the above limitations. Additionally, for the present study, treatment outcome was defined by the pre- and post-test data using the Aggressive Behaviour Scale for reasons explained in section 3.1. However, one will recall that the Delinquent Behaviour Scale was also utilized by the facilitators of the

program in determining the admittance and evaluation of each participant. Therefore, investigating the treatment outcome of participants in the Early Skills Development Program using the Delinquent Behaviour Scale may be an alternative for future research.

As was mentioned in the previous section, the present study was limited by the extant data available for examination. Therefore, future research may benefit from working outside the extant data base to resolve the question of predictive validity in treatment outcome in the Early Skills Development Program. In the previous section a number of variables found to predict treatment outcome in similar programs were suggested. Additionally, future research on the predictors of the Early Skills Development Program may include a *combination* of variables for analysis. For instance, Webster-Stratton and Hammond (1990) found that a combination of socioeconomic status and marital status with mothers, and the combination of marital adjustment and socioeconomic status with fathers, was predictive of child treatment outcome. Moreover, *barriers* to treatment may also be an appealing prospect for future research. For instance, barriers such as perceptions that treatment is demanding and poor relationship with therapist have been found to effect positive treatment outcomes (Kazdin & Wassell, 1999).

Finally, each participant's behaviour was rated prior to the intervention, after the ten week program, and then approximately every 4 to 40 weeks post-treatment across the years the program has been in existence. For the present study, treatment outcome was determined by evaluating participant data from immediately prior to and after treatment and did not include data collected across the intervals. Future research may find different results when including all post-treatment data as part of treatment outcome since the

difference between pre- and post-treatment scores may differ after time. An important finding of Webster-Stratton and Hammond's (1990) research was that significant predictive factors were dependent on the criteria used to evaluate treatment outcome. For instance, depending on when the evaluation occurred, either one month or one year following treatment, the significance levels of the predictive factors change. For instance, marital adjustment or marital satisfaction in fathers was more predictive at one month while socioeconomic status in fathers was more predictive at one year. Previous research has stipulated that the "program has not produced significantly lower levels of aggression over the longer term" (Leibel, 2002). This finding may or may not impact the predictability of the treatment outcome over the longer term as well.

4.6 Conclusion

In conclusion, the Early Skills Development Program has been found to be successful by three previous studies to significantly reduce the aggressive behaviour of its participants (Mykota, 1999; Headley, 2000; Leibel, 2002). However, Leibel (2002) also found that some participants were showing a greater decrease in aggression then others suggesting the need for an investigation into what variables predict treatment outcome.

The present study found that participants who did not have any siblings at the time of treatment showed a significantly higher decrease in aggression than those who did have siblings. A significant correlation was also found between participants with siblings and treatment outcome that suggests 3.7% of the variance in treatment outcome was due to sibling status. One theory to account for this suggests that the presence of siblings somehow adversely affects the treatment outcome of the participant, indicating that proactive measures need to be taken with siblings in the home either through similar

treatment, or by reducing the aggressive behaviour reinforcement the sibling exerts over the targeted child.

The results while significant are low to moderate and thus indicate that additional variables are also accounting for the variance in treatment outcome. Additional psychological variables were discussed in study two that also accounted for a proportion of the variance in treatment outcome. As well, treatment factors, and additional family demographic factors of the child, discussed in sections 4.4 and 4.5 of the present study, may be accounting for a proportion of the remaining variance in the treatment outcome of the Early Skills Development Program.

Implications of the results from the current study on the Early Skills Development Program are twofold. Future research replicating the present study may be improved through a number of factors including a control group and the inclusion of other variables. Additionally, the mandate for an increased focus on siblings in the home seems necessary to increase the treatment outcome of those participants with siblings. Studies have documented improvements in the behaviour of siblings of aggressive children following Behavioural Family Therapy parent training (Lochman, 1990). Developers and facilitators of the Early Skills Development Program may be interested in drawing on some additional treatment paradigms from this Behavioural Family Therapy research.

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APPENDIX A

Definitions

Definitions

1. Attention Problems: tendency to be easily distracted and an inability to maintain attention.
2. Social Problems: inability to interact successfully with peers and adults while at home, in school and in community settings.
3. Withdrawn: tendency to avoid social contact. Refers to behaviours such as avoidance of others, refusal to join group activities, and refusal to talk.
4. Anxiety: tendency to be nervous, fearful, phobic, self-depreciate, and worrisome.
5. Depression: tendency to feel dysphoric, have suicidal ideation, and be withdrawn from others.
6. Thought Problems: tendency to behave in ways that are “odd” or characteristic of psychosis. Refers to behaviours such as harming self, sleep problems, hallucinations, and delusions.
7. Somatization: tendency to be excessively sensitive to pain and complain about minor medical or physical problems which are not due to poor health.

APPENDIX B

Client Data Gathered

ESDP DEMOGRAPHICS and ACHENBACH RATINGS

Child	
Grade	
Age	
Sex	
Diagnosis	
Medications	
Number of siblings	
Place in family	
Family Status	
Guardian	
Foster parent	
Number of foster homes	
Number of schools since program	
Family on social assistance	
Family client of C&Y	
Family subsequent client of C&Y	
COMMENTS	

TEACHER	Withdrawn	Somatic Complains	Anxious / Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behaviour	Aggressive Behaviour
TEST 1								
TEST 2								
TEST 3								
TEST 4								
TEST 5								
TEST 6								
TEST 7								

PARENT	Withdrawn	Somatic Complains	Anxious / Depressed	Social Problems	Thought Problems	Attention Problems	Delinquent Behaviour	Aggressive Behaviour
TEST 1								
TEST 2								
TEST 3								
TEST 4								
TEST 5								
TEST 6								
TEST 7								

APPENDIX C

Teacher Report Form (TRF)

Please Print

TEACHER'S REPORT FORM FOR AGES 5–18

For office use or
ID #

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The informa
from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, e
if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free
print additional comments beside each item and in the spaces provided on page 2.

PUPIL'S FULL NAME — FIRST — MIDDLE — LAST

PUPIL'S SEX ☐ Boy ☐ Girl

PUPIL'S AGE

ETHNIC GROUP OR RACE

TODAY'S DATE Mo. _____ Date _____ Yr. _____

PUPIL'S BIRTHDATE (if known) Mo. _____ Date _____ Yr. _____

GRADE IN SCHOOL

NAME AND ADDRESS OF SCHOOL

PARENTS' USUAL TYPE OF WORK, even if not working now *(Please as specific as you can—for example, auto mechanic, high school teache homemaker, laborer, lathe operator, shoe salesman, army sergeant.)*

FATHER'S TYPE OF WORK: _____

MOTHER'S TYPE OF WORK _____

THIS FORM FILLED OUT BY:

☐ Teacher (full name) _____

☐ Counselor (full name) _____

☐ Other (specify position & give full name): _____

I. For how many months have you known this pupil? _____ months

II. How well do you know him/her? 1. ☐ Not Well 2. ☐ Moderately Well 3. ☐ Very Well

III. How much time does he/she spend in your class or service per week?

IV. What kind of class or service is it? (Please be specific, e.g., regular 5th grade, 7th grade math, learning disabled, counseling, etc.)

V. Has he/she ever been referred for special class placement, services, or tutoring?

☐ Don't Know 0. ☐ No 1. ☐ Yes—what kind and when?

VI. Has he/she repeated any grades?

☐ Don't Know 0. ☐ No 1. ☐ Yes—grades and reasons

VII. Current school performance—list academic subjects and check box that indicates pupil's performance for each subject:

Academic subject	1. Far below grade	2. Somewhat below grade	3. At grade level	4. Somewhat above grade	5. Far above grade
1. _____	☐	☐	☐	☐	☐
2. _____	☐	☐	☐	☐	☐
3. _____	☐	☐	☐	☐	☐
4. _____	☐	☐	☐	☐	☐
5. _____	☐	☐	☐	☐	☐
6. _____	☐	☐	☐	☐	☐

VIII. Compared to typical pupils of the same age:

	1. Much less	2. Somewhat less	3. Slightly less	4. About average	5. Slightly more	6. Somewhat more	7. Much more
1. How hard is he/she working?	☐	☐	☐	☐	☐	☐	☐
2. How appropriately is he/she behaving?	☐	☐	☐	☐	☐	☐	☐
3. How much is he/she learning?	☐	☐	☐	☐	☐	☐	☐
4. How happy is he/she?	☐	☐	☐	☐	☐	☐	☐

IX. Most recent achievement test scores (optional).

Name of test	Subject	Date	Percentile or grade level obtained

X. IQ, readiness, or aptitude tests (optional).

Name of test	Date	IQ or equivalent scores

Does this pupil have any illness or disability (either physical or mental)? ☐ No ☐ Yes—please describe:

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please feel free to write any comments about this pupil's work, behavior, or potential, using extra pages if necessary.

Please Print

Below is a list of items that describe pupils. For each item that describes the pupil ***now or within the past 2 months,*** please circle the ***2*** if the item is ***very true or often true*** of the pupil. Circle the ***1*** if the item is ***somewhat or sometimes true*** of the pupil. If the item is ***not true*** of the pupil, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 1. Acts too young for his/her age
0 1 2 2. Hums or makes other odd noises in class
0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. Behaves like opposite sex
0 1 2 6. Defiant, talks back to staff
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____
_____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Fidgets
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys property belonging to others
0 1 2 22. Difficulty following directions
0 1 2 23. Disobedient at school
0 1 2 24. Disturbs other pupils
0 1 2 25. Doesn't get along with other pupils
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Eats or drinks things that are not food—***don't*** include sweets (describe):_____
_____
0 1 2 29. Fears certain animals, situations, or places other than school (describe): _____
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sounds or voices that aren't there (describe):
_____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, high-strung, or tense
0 1 2 46. Nervous movements or twitching (describe):
_____
_____
0 1 2 47. Overconforms to rules
0 1 2 48. Not liked by other pupils
0 1 2 49. Has difficulty learning
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy
0 1 2 52. Feels too guilty
0 1 2 53. Talks out of turn
0 1 2 54. Overtired
0 1 2 55. Overweight
56. Physical problems ***without known medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feel sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe):
_____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches or cramps
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe):_____

Please Print

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____

0 1 2 59. Sleeps in class
0 1 2 60. Apathetic or unmotivated

0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy

0 1 2 63. Prefers being with older children or youths
0 1 2 64. Prefers being with younger children

0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____

0 1 2 67. Disrupts class discipline
0 1 2 68. Screams a lot

0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe): _____

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Messy work

0 1 2 73. Behaves irresponsibly (describe): _____

0 1 2 74. Showing off or clowning

0 1 2 75. Shy or timid
0 1 2 76. Explosive and unpredictable behavior

0 1 2 77. Demands must be met immediately, easily frustrated
0 1 2 78. Inattentive, easily distracted

0 1 2 79. Speech problem (describe): _____

0 1 2 80. Stares blankly

0 1 2 81. Feels hurt when criticized

0 1 2 82. Steals
0 1 2 83. Stores up things he/she doesn't need (describe):

0 1 2 84. Strange behavior (describe): _____

0 1 2 85. Strange ideas (describe): _____

0 1 2 86. Stubborn, sullen, or irritable

0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot

0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language

0 1 2 91. Talks about killing self
0 1 2 92. Underachieving, not working up to potential

0 1 2 93. Talks too much
0 1 2 94. Teases a lot

0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Seems preoccupied with sex

0 1 2 97. Threatens people
0 1 2 98. Tardy to school or class

0 1 2 99. Too concerned with neatness or cleanliness
0 1 2 100. Fails to carry out assigned tasks

0 1 2 101. Truancy or unexplained absence
0 1 2 102. Underactive, slow moving, or lacks energy

0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud

0 1 2 105. Uses alcohol or drugs for nonmedical purposes (describe): _____

0 1 2 106. Overly anxious to please

0 1 2 107. Dislikes school
0 1 2 108. Is afraid of making mistakes

0 1 2 109. Whining
0 1 2 110. Unclean personal appearance

0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries

113. Please write in any problems the pupil has that were not listed above:

0 1 2 _____

0 1 2

APPENDIX D

Correlations by Variable for Study Three

	Treatment Outcome	No Siblings	Siblings	Single Guardianship	Dual Guardianship	Not on Social Assistance	On Social Assistance
Treatment Outcome	1.000						
No siblings	.193*	1.000					
Siblings	-.193*	-1.000**	1.000				
Single Guardianship	-.045	.053	-.052	1.000			
Dual Guardianship	.031	-.063	.063	-.953**	1.000		
Not on Social Assistance	.017	.106	-.108	-.273**	.249**	1.000	
On Social Assistance	-.017	-.106	.108	.273**	-.249**	-1.000**	1.000

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

APPENDIX E

Advisory Board on Ethics: Application and Approval

APPLICATION FOR THE ETHICS APPROVAL OF A RESEARCH PROPOSAL

Submitted to the University of Saskatchewan Behavioural Research Ethics Board

1. Name of researcher and supervisor and related departments

Researcher's Name: Danielle Rozon
Department: Educational Psychology & Special Education
Phone Number: (306) 955-6414

Supervisor's Name: Vicki Schwean
Department: Educational Psychology & Special Education
Phone Number: (306) 966-5246

Committee Member: Donald Saklofske
Department: Educational Psychology & Special Education
Phone Number: (306) 966-7727

Committee Member: David Mykota
Department: Educational Psychology & Special Education
Phone Number: (306) 966-5258

(a) Name of Student

Student's Name: Danielle Rozon, submitted in partial fulfillment for the Master's Degree in Educational Psychology & Special Education

(b) Anticipated Start and End Dates

Anticipated Research Start Date: The proposed study is an extension of a program evaluation for the Provincial Government. Thus, as the program being evaluated already exists, the proposed study will evaluate its data.

Anticipated Date of Thesis Completion: April 2004

2. Title of Study

Examining Predictor Variables on Treatment Outcome in the Early Skills Development Program

3. Abstract

Saskatchewan Health has provided funding to Saskatoon and North Battleford District Health Boards to establish a school and home-based program for very aggressive kindergarten and grade one children. The purpose of the Early Skills Development Program is to assist young children who present with aggressive

behaviours develop more socially acceptable interaction styles so they are less at risk for social rejection and/or neglect (Child and Youth Services, 2002).

Pre- and post-intervention data has been collected on each child that participates in the 10-week Early Skills Development Program using the Child Behavior Checklist- Teacher Report Form, which includes eight clinical scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Aggressive Behavior, and Delinquent Behavior. In addition, demographic data was collected on each child, including age, grade, gender, diagnosis of a behaviour/mood disorder, medication status, number of siblings, family status, and whether the family is on social assistance.

Evaluations of the efficacy of the Early Skills Development Program has been conducted at year one (Mykota, 1999), year two (Headley, 2000), and year three (Leibel, 2002) since the program's commencement. Each study found statistically significant deceases in aggression overall. However, closer examination of individual children who participated revealed several participants either had more significant decreases in aggressive behaviour or were not successful at all. The finding of some children showing greater improvement over others, or no improvement at all, suggests the need for examination of the predictive variables that affect treatment outcomes in the Early Skills Development Program.

The objective of the proposed research study is to determine what factors will predict treatment outcome in the Early Skills Development Program. Based on previous research (e.g., Dumas & Wahler, 1983; Kazdin & Crowley, 1997; Lochman et al, 1985) and the extant data available, it is postulated that certain factors, such as the demographic variables and the ratings on the Child Behavior Checklist-Teacher Report Form will predict the behaviour change of participants immediately following treatment in the Early Skills Development Program.

Child and Youth Services. (2002). Early Skills Development Program: A supplementary guide to be used in conjunction with the Skills for Success Manual. *Unpublished Manuscript,* Saskatchewan Department of Health at Saskatoon.

Dumas, J.E., & Wahler, R.G. (1983) Predictors of treatment outcome in parent training: mother insularity and socioeconomic disadvantage. *Behavioural Assessment*, 5, 301-313.

Headley, M. (2000). The Early Skills Development Program. *Unpublished manuscript*, University of Saskatchewan at Saskatoon.

Kazdin, A.E. & Crowley, M.J. (1997). Moderators of treatment outcome in cognitively based treatment of antisocial children. *Cognitive Therapy and Research*, 21(2): 185-207.

Leibel, C.D. (2002). Examining the treatment effects of aggressive children: The Early Skills Development Program. *Unpublished manuscript*, University of Saskatchewan at Saskatoon.

Lochman, J.E., Lampron, L.B., Burch, P.R. Curry, J.F. (1985). Client characteristics associated with behaviour change for treated and untreated aggressive boys. *Journal of Abnormal Child Psychology*, 13, 527-538.

Mykota, D. (1999). Year one analysis of the Early Skills Development Program. *Unpublished Manuscript,* University of Saskatchewan at Saskatoon.

4. Funding

No research grant funding is required to assist with this research.

5. Participants

Data has been collected from students in seven schools in North Battleford and six schools in Saskatoon who have been participating in the Early Skills Development Program from September of 1997 in North Battleford and from January 1998 in Saskatoon to June 2003 in both sites. Students were selected based on their teachers identifying them as presenting with continual aggression or violent behaviours. Once identified, parental consent was obtained prior to a student being accepted into the Early Skills Development Program. Teachers further identified students and determined their suitability for the program by completing the Child Behaviour Checklist-Teacher Report Form. Students were eligible for the Early Skills Development Program if their scores from the Teacher Report Form- Aggressive Behavior Scale and/or Delinquent Behaviour Scale- were equal to or exceeded a cut off score at the 84th percentile (T-score= 60).

Extant data that was collected by Saskatchewan Health is available for participants that range in age between four and seven years when they started the program, and who would currently be between eight and eleven years of age. It is unknown at this time the exact number of participants available, however the researcher estimates between 100 and 160 participants with the majority being male. This estimate is based on past research studies using this same population (Leibel, 2002). Data has been collected with regard to change in behaviour, rated using the Teacher Report Form, and with regards to demographic information in order to investigate possible predictor variables. Demographic variables include: (a) the child's age, (b) gender, (c) diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), (d) whether the child is on psychotropic medication, (e) number of siblings, (f) whether the child resides in a single or dual parent home or is in foster placement, and (g) whether the family is on social assistance. The information that is required for the

purposes of the proposed research does not require identifying information about the individual participant.

Leibel, C.D. (2002). Examining the treatment effects of aggressive children: The Early Skills Development Program. *Unpublished manuscript*, University of Saskatchewan at Saskatoon.

6. Consent

Participants for the proposed research study were referred by teachers to participate in the Early Skills Development Program. Consent was obtained from the parents and/or guardians prior to the students' participation in the program. Since the information that is required for the purposes of the proposed research does not require identifying information about the individual participant, the data utilized in the proposed research falls under Section C in the Tri-Council Policy Statement: Secondary Use of Data. Consent obtained from the parents and/or guardians is not anticipated to be an issue because the data can in no way be linked to the students who participated in the Early Skills Development Program.

The researcher will be obtaining the data from the students who participated in the Early Skills Development Program from the program facilitators of the Saskatoon and North Battleford Health Districts. The researcher will have no direct contact with the participants. Names of the students and the schools they attend(ed) will not be made available to the researcher. Only the extant charted data will be made available to the researcher for the purposes of analyzing the participant's performance in the Early Skills Development Program. Therefore, the data available to the researcher will be anonymous and unidentifiable.

7. Methods/Procedures

Once identified as presenting with severe and continuous aggressive behaviour and receiving informed consent from parents and/or guardians, teachers rated the participant's behaviour using the Child Behavior Checklist- Teacher Report Form, which supplied pre-test data. If the child scored in the 84th percentile (T-score= 60) or higher on the Aggressive Behavior Scale and/or Delinquent Behaviour Scale they were admitted into the program. Additionally, facilitators from the program gathered demographic data from each participant including: the child's age, gender, diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), whether the child is on psychotropic medication, number of siblings, whether the child resides in a single or dual parent home or is in foster placement, and whether the family is on social assistance. After permission was gained from the parents, the children went through a ten week cognitive behaviour skills training called the Early Skills Development Program. At the end of the ten weeks, teachers were required to

complete a second Child Behavior Checklist- Teacher Report Form, which supplied post-test data.

To determine if the treatment outcome of the Early Skills Development Program can be predicted, the behaviour and demographic data of each participant will be statistically analyzed by the researcher using the participants' pre- and post-test data from the Child Behavior Checklist-Teacher Report Form and the participants' demographic data.

8. Storage of Data

All data that is obtained by the researcher will be stored in a locked facility when not being used for the purposes of data analysis. All information provided to the researcher by facilitators of the Early Skills Development Program will be remaining unidentifiable and anonymous. The proposed research results and all associated material will be safeguarded and securely stored by Dr. Vicki Schwean at the University of Saskatchewan for a minimum of five years upon completion of the study.

9. Dissemination of Results

The data that is obtained by the researcher will be used for the completion of a Master's Degree thesis. This data and the proposed research results may also be used in the publication of journal articles or related studies.

10. Risk or Deception

There is no deception or foreseen risks to the participants in this study.

11. Confidentiality

The researcher will not have any direct contact with participants. It is only the extant charted data that will be made available to the researcher that will reflect the participants' performance in the Early Skills Development Program through the participants' pre- and post-test results on the Child Behavior Checklist-Teacher Report Form and the participants' demographic data. The demographic data made available to the researcher will include: the child's age, gender, diagnosis of a behaviour disorder (i.e., Conduct Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder) and/or a mood disorder (i.e., Anxiety, Depression), whether the child is on psychotropic medication, number of siblings, whether the child resides in a single or dual parent home or is in foster placement, and whether the family is on social assistance. Names of the participants and the schools they attend(ed) will not be made available to the researcher. All additional precautions will be taken to protect the anonymity of the participant.

12. Data/Transcript Release

N/A

13. Debriefing and Feedback

N/A

14. Required Signatures

Student Signature _____

Supervisor's Signature _____

Department Head Signature _____

15. Contact Name and Information

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UNIVERSITY OF SASKATCHEWAN
BEHAVIOURAL RESEARCH ETHICS BOARD

http://www.usask.ca/research/ethics.shtml

NAME: Vicki Schwean (Danelle Rozon)
Educational Psychology & Special Education

BSC#: 03-1187

DATE: October 17, 2003

The University of Saskatchewan Behavioural Research Ethics Board has reviewed the Application for Ethics Approval for your study "Examining Predictor Variables on Treatment Outcome in the Early Skills Development Program" (03-1187).

1. Your study has been APPROVED.

2. Any significant changes to your proposed method, or your consent and recruitment procedures should be reported to the Chair for Committee consideration in advance of its implementation.

3. The term of this approval is for 5 years.

4. This approval is valid for five years on the condition that a status report form is submitted annually to the Chair of the Committee. This certificate will automatically be invalidated if a status report form is not received within one month of the anniversary date. Please refer to the website for further instructions: http://www.usask.ca/research/behavrsc.shtml

I wish you a successful and informative study.

Dr. David Hay, Acting Chair
University of Saskatchewan
Behavioural Research Ethics Board

DH/ck

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