Evaluation of an Intervention Program for Maltreating Fathers: Statistically and Clinically Significant Change

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A thesis submitted in conformity with the requirements for the degree of Masters of Arts
Human Development and Applied Psychology
University of Toronto

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Human Development and Applied Psychology
University of Toronto
2011

Abstract

Currently, few intervention programs for maltreating fathers exist and even fewer of them have been evaluated for effectiveness. The current study examined the effectiveness of a community-based group treatment program for domestically violent and child abusing fathers by looking at reliability, magnitude, and clinical significance of changes in variables associated with maltreatment risk mechanisms in a group of 98 participants. The intervention was found to be largely successful in producing statistically significant changes in fathers’ overreactivity to children’s misbehaviour, ability to co-parent with children’s mothers, and their ability to prioritize their children’s needs. However, a closer look at individual change (using measures of clinical significance), showed variability in fathers’ responses to treatment, with some men making changes across measures and some remaining in the clinically concerning range despite treatment efforts. The implications of these findings for intervention and maltreatment prevention are discussed.
Acknowledgments

I would like to thank my supervisor, Dr. Katreena Scott, for her understanding, patient guidance, and expertise. I would also like to thank Dr. Michele Peterson-Badali for her helpful comments and feedback as well as her support throughout the process. I would also like to acknowledge the agency staff, group facilitators, and clients at participating Caring Dads agencies without whom this research would not have been possible. Finally, I would also like to thank all of my lab members for their encouragement, helpful advice and patience. This research was funded by the Social Sciences and Humanities Research Council.
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1 Introduction

During the past thirty years there has been an increase in research on how fathers’ involvement contributes uniquely to their children’s development (Lamb & Tamis-LeMonda, 2004). Good quality of father-child relationships is related to numerous positive outcomes for children, such as lower delinquency, fewer behavioral problems, higher academic achievement and better school attitudes (see reviews by Amato & Rivera, 1999; Marsiglio et al, 2000; Pleck & Masciadrelli, 2004; Sarkadi et al., 2010). As research on the benefits of healthy father-child relationships has grown, so too has concern about the potential harm of abusive and domestically violent fathers. Data from Canada’s latest incidence study of child abuse and neglect shows that in the fall of 2003 there were an estimated 82,065 physical abuse investigations (17.25 investigations per 1,000 children) of which 31,488 cases were substantiated. Seventy percent of physical abuse victims were living in two-parent families. In two parent families, out of all cases where physical abuse was the primary substantiated maltreatment, mothers were perpetrators in 6,969 cases (51%) and fathers in 9,145 (67%). Furthermore, exposure to domestic violence was investigated in an estimated 49,994 cases (10.51 investigations per 1,000 children). Exposure to domestic violence was substantiated in 70% of these cases, and suspected in another 13%. Biological fathers/stepfathers were considered to be responsible for exposure to domestic violence in 88% of investigations where exposure to domestic violence was the primary substantiated maltreatment (Trocme et al., 2005). Thus it appears that in two parent families, fathers are the most frequently investigated perpetrators of physical abuse, and exposure of their children to domestic violence (Trocme et al., 2003). All of these forms of childhood victimization are linked to later problems in adjustment (Springer, Sheridan, Kuo, Carnes, 2003; Wekerle & Wolfe, 2003). Children who experience abuse are more likely to be diagnosed with a psychological disorder and to show difficulties with early attachment, emotional regulation, peer relationships, school adjustment, and pro-social behaviours (Kendal-Tackett, 2003; Mash & Wolfe, 2003). During adolescence, child maltreatment history raises the risk for smoking, substance use, and early and promiscuous sexuality (e.g., Wolfe, Scott, Wekerle & Pittman, 2001). Child maltreatment, child exposure to domestic violence and associated adverse childhood experiences also show a graded relationship to the presence of adult diseases including
ischemic heart disease, cancer, chronic lung disease, skeletal fractures, liver disease, and premature mortality (Anda et al., 2008; Felitti et al., 1998).

Despite the prevalence and deleterious nature of father-perpetrated abuse and the potential advantages of promoting healthy father-child relations, until recently both research and interventions have tended to focus on mothers (Sternberg, 1997). Review of research in the area of physical maltreatment found that males were included in less than one half of the articles and that the total number and percentage of males in research samples was significantly less than the number and percentages of females (Haskett, Marziano & Dover, 1996). Furthermore, unlike maltreating mothers, maltreating fathers have not typically been provided with intervention and support (Featherstone, 2001; Featherstone & Peckover, 2007; Sternberg, 1997). In cases when fathers are violent towards their children’s mothers, social services tend to automatically limit contact between fathers and their children, fearing that such contact may be dangerous for children and their mothers (Edleson & Willams, 2007; Featherstone & Peckover, 2007; Peled, 2000; Scott & Crooks, 2007). However, limiting father contact by ensuring that fathers do not live with their children does not necessarily eliminate the risk for children and their mothers (Scott & Crooks, 2004).

In response to these challenges, researchers are presently advocating for intervention with abusive fathers, hoping that these interventions will increase fathers’ accountability and provide them with an opportunity to develop healthy relationships with their children (Featherstone & Peckover, 2007; Scott & Crooks, 2007). As a result of these recent efforts to involve fathers in treatment, several new intervention programs for fathers (including programs for abusive fathers) have emerged (Featherstone, 2001). However, little is known about the impact these programs may be having on fathering behaviors and child abuse prevention as there has not yet been a concerted effort to evaluate treatment-related change in this population (Featherstone, 2001; McBrite & Lutz, 2004).

As a first step in the treatment effectiveness evaluation process, the aim of this project was to examine efficacy of a community-based group treatment program for domestically violent and child abusing fathers called Caring Dads: Helping Fathers Value Their Children. An important question pertaining to evaluation of intervention for maltreating fathers is whether or not relevant
risk mechanisms for maltreatment and poor parenting practices are changing (Rutter, 2009). Therefore, the present study sought to evaluate the reliability, magnitude, and clinical significance of changes in fathers participating in a group-based intervention on a number of variables implicated in maltreatment risk mechanisms including parenting alliance, overreactive and hostile parenting practices, and misbalancing of child’s needs.

1.1 Caring Dads Intervention Program

Caring Dads (Scott, Francis, Crooks & Kelly, 2006) is a 17-week group intervention program for fathers who have been abusive to their children and/or exposed their children to domestic violence. Most participants of the program have been identified as maltreating by formal legal or child protection systems. Some participants have been considered at risk for perpetration of abuse by their referring agents. Caring Dads groups are closed groups that have between 8 and 12 participants and a minimum of two co-facilitators. The program aims to increase men’s appreciation of the impact of violence exposure on children; it also targets abusive parenting strategies and attitudes that lead to maltreatment. The program aims to meet several therapeutic goals, each of which is theoretically derived and supported by research. The initial stage of the program was developed based on readiness-to-change literatures and is aimed at developing trust and increasing men’s motivation for engagement in the intervention process (Crooks, Scott, Francis, Kelly & Reid, 2006). The later stages of the program are based on integration of current knowledge on maltreatment mechanisms with knowledge on parenting and domestic violence interventions. Several weeks into the program, the idea of needs prioritization as a central component of parenting is introduced. As a result, the program aims to change men’s parenting from parent-centered to child-centered by teaching them to understand child development and their children’s needs. The program also aims to increase men’s awareness of the impact of domestic violence and abusive parenting on their children (Scott et al., 2006). Ideally, towards the end of the program men will recognize that their abusive behaviors have been harmful to their children and be able rebuild trust with their children by committing to child-centered parenting. The present study evaluates the extent to which the program is able to meet its goals in changing the behaviors that place the men at risk for maltreatment. The program is well suited for this evaluation process because, unlike many newly-emerged parenting programs for fathers,
it is manualized and has a clearly articulated theoretical framework (Lamb & Tamis-LeMonda, 2004).

1.2 Maltreatment risk mechanisms

According to Bronfenbrenner’s ecological systems theory, development of any phenomenon is a product of reciprocal interaction between individual and contextual factors. A large number of such individual and contextual risk factors linked to maltreatment have been identified. Maltreatment has been associated with low socio-economic status, life stress, social isolation, depression, negative reactivity and attributions, and family conflict (reviews by Black, Heyman & Slep, 2001; Milner & Chilamkurti, 1991; Stith et al., 2009). However, a mere demonstration of statistical association between these multiple risk factors and maltreating behaviors is not sufficient for understanding of the phenomenon (Rutter, 2002). Rutter (1994) made an important distinction between risk factors - variables that are associated with maltreatment but do not necessarily explain it - and risk mechanisms that account for the exact processes by which maltreatment occurs. Going beyond indentifying risk factors and proposing a maltreatment mechanism is necessary for understanding of the processes that underlie the phenomenon (Rutter, 1994, 2002). Furthermore, focusing research attention on specific mechanisms that cause abusive behaviors and poor parenting practices allows for better understanding of what needs to be done in order to promote change. Consequently, interventions for maltreating parents that target these proposed mechanisms of maltreatment are more likely to be effective (Rutter, 2009).

There are several proposed individual and family level risk mechanisms that are relevant to families characterized by domestic violence and child abuse (see review of family violence theories by Slep & O’Leary, 2001). On a family level, disruption of co-parenting alliance impacts parenting practices and may lead to maltreatment (Margolin, Gordis & John, 2001; Rutter, 1994). Additionally, such individual factors as perpetrator’s hostility and overreactivity (e.g. Rodriguez & Richardson, 2007) as well as self-centeredness (Scott & Crooks, 2007) have been implicated in etiological theories of maltreatment. Given that the risk mechanisms listed above are potentially malleable, they could serve as suitable parenting intervention targets. In the following section I will discuss how each of four variables (hostility, overreactivity, parenting alliance, and balance of needs) is related to risk for maltreatment and poor child outcomes in families.
1.2.1 Anger and Hostility

An elevated level of anger and hostility has been implicated in risk mechanisms for both child maltreatment and domestic violence (e.g. Eckhardt, Sampy & Murphy 2008; Rhoades & O’Leary, 2007). In a recent and comprehensive meta-analytic study of the risk factors for childhood maltreatment, Stith et al., (2009) identified parents’ anger/hyper-reactivity as the variable most strongly associated with maltreatment, with the effect size surpassing that of parents’ SES, parents’ age and any of the child variables. More specifically, studies have established that abusive parents are particularly reactive to stimuli in the environment and are prone to experiences of anger (Rodriguez & Green, 1997; Spinetta, 1978). Compared to others, these parents are more likely to experience negative emotions and physiological arousal in response normal children’s behaviors, like crying or tantruming (Bauer & Twentymen, 1985; Cavanagh, Dobash & Dobash, 2007; Frodi & Lamb, 1980). More recent studies examined abusive fathers specifically and found that these fathers scored higher on measures of expression of anger/hostility (Francis & Wolfe, 2008; Slep & O’Leary 2007).

Elevated anger, reactivity and hostility are also prominent features of domestic violence perpetration (Eckhardt, Sampy & Murphy, 2008). High levels of anger and arousal discriminate between perpetrators of domestic violence and non-violent men (Dye & Eckhardt, 2000; Lee, Guterman & Lee, 2008; Norlander & Eckhardt, 2005; O’Leary et al., 2007). Furthermore, high severity IPV (Intimate Partner Violence) perpetrators show more anger and hostility than the low-severity ones (Norlander & Eckhardt, 2005). Thus, similar to findings in child maltreatment research, anger and overreactivity appear to play an important role in domestic violence perpetration.

Literature on domestic violence and child physical abuse clarifies the way in which high levels of anger and arousal serve as a risk mechanism for maltreatment. It is proposed that heightened levels of anger and hostility directly influence perpetrators’ cognitions and attributions and then act as energizers of aggressive behavior (see review by Norlander & Eckhardt, 2005).

Anger Hostility and Overreactive Discipline Practices

One way in which high anger and arousal likely play out in parenting context is in over-reactivity and hostility of parents’ reaction to the child’s misbehavior (Arnold et al., 1993; Rhoades &
O’Leary, 2007). Negative affect and anger are proposed to contribute to child maltreatment by prompting negative attributions for children’s behaviors and interfering with parents’ problem solving and information processing abilities, thereby preventing them from generating and choosing appropriate parenting strategies (Rodriquez & Richardson, 2007). Consistent with the hypothesis of anger disturbances’ etiological role in violence perpetration, Slep and O’Leary (2007) found overreactive discipline to be a strong and direct predictor of parental aggression. These researchers concluded that heightened levels of anger in parents, particularly overactive discipline, may serve as a useful intervention target as it was independent of other direct predictors of parental aggression and appeared to be a point of convergence for many other aggression pathways.

1.2.2 Parenting alliance

Other risk factors very strongly associated with maltreatment are high levels of family conflict and low family cohesion (Stith et al., 2009). An extreme form of highly conflictual family relationships, spousal violence, has also consistently been linked to child maltreatment (Coohey & Braun, 1997; Cox, Kotch & Everson, 2003). A possible risk mechanism that explains the relationship between spousal conflict and maltreatment was proposed by Margolin and colleagues (Margolin, Gordis & John, 2001). These researchers found that parenting alliance (parents’ capacity to relate to each other in the role of parent) mediates the relationship between spousal conflict and disrupted parenting, thus serving as an indirect risk mechanism for child maltreatment (which can be considered an extreme form of parenting disruption) (See also Katz & Low, 2004; Morrill, Hines, Mahmood & Cardova, 2010).

The notion of co-parenting alliance serving as a key element in maltreatment mechanism is also supported by a growing body of literature that links low co-parenting alliance to disrupted parenting practices (Abidin & Konold, 1999; Davies, Struge-Apple, & Cummings, 2004; Feinberg, Kan, & Hetherington, 2007). Parenting alliance was also related to more negativity in interactions with children in both mothers and fathers (Abidin & Konold, 1999; Feinberg, Kan & Hetherington, 2007). Despite its strong connection to parenting practices and parent-child relationship, parenting alliance appears to be conceptually and empirically independent from other variables such as marital quality and parent management skills (Margolin et al., 2001).
Given that co-parenting alliance is often disrupted in families characterized by domestic violence (e.g. Katz & Low, 2007), it likely serves as a risk mechanism for maltreatment in these families as well. Perpetrators of domestic violence are noted to be denigrating to their partners in general and to undermine their partners’ authority as a parent (Bancroft & Silverman, 2002, 2004; Edleson, Mbilinyi & Beeman, 2003; Hughes & Marshall, 1995; Radford & Hester, 2001). Katz and Low (2004) looked at a community sample of families characterized by marital violence and found that hostile-withdrawn co-parenting mediated the relationship between marital violence and child outcomes as well as predicted children’s adjustment even when marital violence was controlled for.

In sum, research on co-parenting suggests that parenting alliance constitutes a risk mechanism that links high family conflict (especially spousal violence) to disrupted parenting, with maltreatment being its extreme form. The conceptual differentiation of co-parenting from parent management skills and marital quality makes co-parenting alliance an important intervention target (Katz & Low, 2004). However, while fostering co-parenting alliance has a particular relevance for male batterers’ parenting, it is not usually addressed in either parenting interventions or batterer programs.

1.2.3 Self-Centeredness and Balance of Needs

Certain personality variables related to narcissism may also play a role in abuse perpetration (Dutton, 1996; Francis & Wolfe, 2008; Seng & Prinz, 2008). Perpetrators of domestic violence and childhood maltreatment are often found to display narcissistic traits (Wiehe, 2004). A combination of such narcissistic traits as low perspective-taking ability, sense of entitlement, and hypersensitivity to criticism results in a parent-centered (as opposed to child-centered) parenting pattern (Scott & Crooks, 2004). Parenting characterized by misprioritization of needs within parent-child relationship is proposed to play a role in maltreatment process and serve as a risk mechanism for poor child outcomes (Francis & Wolfe, 2008; Scott & Crooks, 2004). Support for this concept comes from three different sources: clinical observation of physically abusive and domestically violent men, empirical studies of batterers, and research on abusive parents’ perspective taking ability.
First, clinical observations of domestically violent and physically abusive men have emphasized their sense of entitlement to children’s love and affection and inability, or unwillingness, to empathize with their victim’s feelings/states. For example, men who batter their wives have been observed to treat their family members as personal possessions and view their children as “owned objects” (Bancroft & Silverman, 2002, p. 12). An examination of patterns of difficulty these men displayed in their relationship with children showed that a large proportion of them did display self-centered parenting styles characterized by unresponsiveness and failure to appreciate children’s psychological boundaries and needs (Scott & Crooks, 2007). For example, these men’s involvement with children tends to vary according to their energy levels and not children’s needs. Their involvement with children may also depend on whether or not there is an opportunity for public recognition for their fathering (Bancroft & Silverman, 2002, p.32). Taken together, clinical observations of maltreating men’s relationship with their children give preliminary support to the misprioritization of needs serving as a maltreatment mechanism (Scott & Crooks, 2007).

Second, there is empirical evidence for perpetrators of violence frequent display of hypervigilance to rejection, defiance and high need for control (Dutton, 1996; Hamberger & Hastings, 1991). Furthermore, Baumeister and colleagues suggested that family violence is a result of perpetrators’ threatened egotism (Baumeister, Smart & Boden, 1996). Similarly, maltreating parents’ high need for control and sensitivity to their authority being challenged has been established empirically (e.g., Bugental & Happaney, 2004). In an experimental study that included both mothers and fathers, Buggental and colleagues found that fathers with low perceived power (the perception of power was manipulated by priming competitive ideation with children) were more likely to attempt to repair their power using child derogation. (Bugental & Happaney, 2000). Therefore, it appears that fathers who see themselves as powerless, tend to be unable to balance their psychological needs (wanting to increase their sense of their own power and control) with those of their children.

Finally, several studies demonstrated the relationship between parents’ low perspective taking ability and physical abuse (De Paul, Perez-Albeniz, Guibert, Asla & Ormaechea, 2008; Francis & Wolfe, 2008; Perez-Albeniz & De Paúl, 2004; Wiehe, 2003). When presented with cues of distress, individuals at high risk for abuse were found to be more likely to experience anxiety and
discomfort, instead of empathic concern, and to attribute hostile intent to the victim (De Paul et al., 2008; Perez-Albeniz & De Paúl, 2003, 2004; Wiehe, 2003). De Paul et al. (2008) suggested that in a situation of conflict and distress, parents’ inability to adopt the child’s perspective as well as parents’ state of anxiety that is incongruent with the child’s state can lead to self-oriented and egotistic reactions.

Thus, clinical observations of maltreating men, empirical studies of male-batterers, and research on physically abusive parents converge on self-centeredness, self of entitlement for their children’s love, need for control, inability to take children’s perspective as an important perpetrator characteristic. It appears that a combination of these variables leads to a parenting style characterized by misprioritization of child’s needs. Although there have not yet been any prospective studies that investigated the relationship between such parenting style and abusive parenting, it is likely that misprioritization of needs serves as child abuse risk mechanism. Fathers engaged in this parenting style are likely to use abuse as means to ensure that their children are available to meet their physical, emotional and psychological needs (see Scott & Crooks, 2004). This maladaptive parenting style characterized by misprioritization of needs presents an important intervention target for domestically violent and physically abusive men (Scott & Crooks, 2004, 2007).

1.2.4 Risk Mechanisms: Conclusion

Domestically violent and physically abusive men present with a number of unique parenting concerns. It is essential that interventions for domestically violent and abusive men target risk mechanisms that are specific to both this population and the context of parenting. Such potential risk mechanisms as overall levels of anger and arousal, overreactive and hostile discipline, parenting alliance, and misprioritization of child’s needs are particularly relevant to the population of domestically violent and abusive men. Given their relevance, these factors have been incorporated into Caring Dads program foundational assumptions and treatment goals (Scott & Crooks, 2004, 2007).

The aim of the present study is to examine effectiveness of Caring Dads program as well as its main theoretical assumptions by looking at the impact participation in the program has on variables that are targeted as primary causes of father-perpetrated abuse. Therefore, the present
study will examine whether or not the fathers’ ability to prioritize their children’s needs over their own, build a parenting alliance with the child’s mother as well as to manage their negative reactivity will change from the beginning to the end of the program. Given that the outcomes of such intervention programs have implications for safety and well-being needs of children and children’s mothers (Scott & Crooks, 2007), merely looking into whether or not a group of fathers made some progress is not sufficient. Thus the treatment evaluation has to be done with sensitivity to the amount of change as well as its practical and clinical implications in order to determine whether and which participants continue to pose risk for their children after the intervention. In the next section the issues concerning the methods for assessment of treatment effectiveness and evaluation of practical and clinical implications of change will be discussed.

1.3 Evaluating Treatment Effectiveness: Clinical vs. Statistical Significance

Treatment programs’ effectiveness has traditionally been evaluated by assessing whether or not change is statistically significant from pre- to post-treatment. These analyses provide information on the reliability of change (i.e., the likelihood of finding group differences using other randomly sampled groups). As has been cogently argued by many theorists, such tests are not sufficient for determining the effectiveness of clinical treatments for a number of reasons including: lack of information on the magnitude of change, limitations in comparing change across studies and analyses, lack of information on the importance of change or on the impact the treatment had on clients’ functioning (Kazdin, 1999), and inability to assess variability of treatment responses within the group (Jacobson et al., 1999).

To address the first two of these limitations (lack of information on the magnitude of change and incomparability across studies and measures), the measure of effect size is now commonly used (Huberty, 2002). A measure of effect size was first introduced by Cohen (1969), who proposed that effect size (d) be equal to the difference between population means divided by the average population standard deviation. This standardized mean difference is the most commonly used way of assessing effect size in the group-mean-comparison situations and is particularly useful when the scale of measurement is meaningful to the reader (Huberty, 2002).
The notion of clinical significance was introduced to deal with the issues of practical importance of treatment and variations in individuals’ responses to a specific intervention. By the end of 1990s clinical significance started to become prominent in discussions of treatment effectiveness (Kendall, 1999). As more researchers started to be concerned with clinical significance (i.e., clinical meaningfulness of treatment effects), several different ways of assessing and conceptualizing clinical significance were developed.

One common way of assessing clinical significance is using available normative information associated with a dependent measure. Having available normative information allows for comparison of individuals’ or groups’ scores after treatment with the reported normative scores on a specific measure to evaluate whether or not the treated individuals are functioning within a normal range (Kendall, Marrs-Garcia, Nath & Sheldrick, 1999). Normative Comparisons with Equivalency Testing is a procedure that commonly used for such comparison. This procedure allows for assessing whether or not a group of treated individuals who scored in the clinical range on a target measure before treatment returned to within-normative range after the treatment (Kendall et al., 1999). Equivalency Testing (Rogers, Howerd & Vessey, 1993 as cited by Kendall et al., 1999) has been consistently used in biostatistical research to establish the equivalence of the normative and treated groups (Kendall et al., 1999). This procedure evaluates whether or not the difference between the post-treatment group and the normative group means is within an established specified range of closeness (the range is determined by the researcher and is usually within a standard deviation of the normative mean or a clinical cutoff). The main advantage of this method is that it allows for assessing change against a standard independent of treated individuals (Kendall et al., 1999; Kazdin, 1999). However, this method does not allow for evaluation of change at the individual level.

Another way of assessing clinical significance, called Reliable Change Index (RCI, Jacobson & Truax, 1991), is best suited to assess change at the individual level. RCI method entails evaluation of reliability of change by accounting for the inherent instability of the measure/scale as it incorporates its reliability/internal consistency coefficient into the index calculation (Jacobson et al., 1999). By calculating individual RCIs one is able to address the issue of variability of change within the treatment group. Individual RCIs are used to determine what percentage of the treatment group underwent reliable change by the end of the treatment.
Jacobson and colleagues (Jacobson et al., 1999) suggest further classifying individuals into groups depending on whether or not their RCI is significant and whether or not they end up in the functioning range indistinguishable from that of the normal population. Thus, individuals who have significant RCIs and end up functioning within the normative range are considered recovered (group 1); individuals with significant RCIs but below normative functioning are considered improved but not recovered (group 2); individuals with significant RCIs who are functioning within normative range at the beginning of a treatment program but moved into the clinical range by the end of the program are considered deteriorated (group 3). Finally, individuals whose RCIs are not significant are considered unchanged (group 4).

Both Normative Comparison with equivalency testing and RCI methods have advantages and disadvantages and, presently, there is no consensus in the literature with regards to superiority of any single method (Kazdin, 1999; Kendall, 1999). Given the lack of consensus, one means of gaining a fuller picture of a program’s effectiveness is using multiple measures of change significance, including conventional statistical tests as well as several methods of clinical significance testing. This was the analysis procedure chosen for the current study.

1.4 Readiness to change as a Potential Moderator of treatment outcome

Finally, this study explores predictors of intervention effectiveness. It is well-established that a majority of intervention programs are not equally effective for all participants. Treatment effectiveness for participants of domestic violence and child abuse intervention programs is of particular interest due to potential implication for victims of violence. At the same time, treatment effectiveness in these programs could be more difficult to achieve given that perpetrators of violence do not always participate in treatment voluntarily (see review by Scott & King, 2007). Recent studies appear to converge on readiness to change as a good predictor of treatment success (Mbilinyi et al., 2009). Based on the Transtheoretical Model of Therapeutic Change (Prochanska & Di Clemente, 1982, 2005) it has been proposed that perpetrators at the earlier stages of change who either do not recognize their behaviors as problematic or are not motivated to change them will be less likely to actively participate in treatment, and more likely to drop out.
Reluctance/readiness for change have been shown to predict treatment outcomes (Alexander & Morris, 2008; Littell & Girvin, 2005; Scott & Wolfe, 2003), treatment attrition (e.g. Cadsky, Hanson, Crawford & Lalonde, 1996) and reoffending (e.g. Lee, Uken & Sebold, 2007). Based on the readiness for change research, present study will investigate whether or not readiness for change moderates outcome on measures of parenting alliance, prioritization of needs, and negative reactivity from the beginning to end of treatment.

1.5 Objectives and Hypotheses

Given that few intervention programs for fathers exist and the ones that exist have not been evaluated for their effectiveness, the current study will evaluate the effectiveness of the Caring Dads program for fathers who have been abusive to their children and/or exposed their children to domestic violence. More specifically, the present study aims to evaluate the reliability, magnitude and clinical significance of changes in such relevant risk mechanisms as parenting alliance, overreactive and hostile parenting practices and misbalancing of child’s needs. I hypothesize that as a result of intervention, fathers will demonstrate statistically significant changes on the measures of aggression, hostile and overreactive discipline strategies, ability to prioritize their child’s needs, and co-parenting alliance. I expect these changes to be clinically significant. More specifically, I expect that fathers’ improvement will be large enough to have practical importance and that the significant portion our sample will return to the normative levels of functioning. Finally, I hypothesize that the fathers’ initial level of motivation will moderate the treatment outcome, with the fathers who are less motivated at the start of the program making less progress.

2 Method

2.1 Participants

Participants were recruited from several Caring Dads groups conducted in Toronto (ON CA), London (ON CA), Huron county (ON CA), and Arlington (TX USA). Every man in the group was offered to participate in the study, which involved completing questionnaires at the beginning and at the end of the program. A total of 98 men who completed both pre and post measures were included in the present sample. The original number of men who started the
program was 287. It is important to note that there are multiple reasons for men not completing the post-treatment measures at the end of the study and the rate of attrition from research neither reflects the rate of attrition from the program nor men’s desire to remain in research. There were four reasons for men not completing the questionnaires: 1. They did not complete the program, 2. The facilitators did not administer the post measures, 3. The men did not want to complete the measures at the end, and 4. The men did not have time during the last group session and it was hard to track them down after that. Unfortunately, I am unable to provide the exact numbers of men for each possible attrition reason. Seventy-six out of 98 men filled out the demographic information form; as a result the information reported here is describes 78% of our sample. Men’s age ranged from 20 to 51 years (M=36.27 years, SD=8.53). Forty eight percent of men (n=47) indicated that they identified with a particular ethnic group. Of these men 13% (n=13) identified solely as Canadian, 15% (n=15) as other, 6% as African (N=6), and the rest as English, Dutch, Irish, Chinese, Italian, Ukranian, South Asian or Latino. Men reported having between 1 and 7 children, with the average number of children being 2.5. Men’s children ranged in age from 0 to 19 years, with an average child age of 7 1/2. Men were mostly referred by child protective services (42%) and probation services (18%), though several men came as voluntary clients or were referred by their wives (8%) or from other sources of referral (e.g., court mediator, lawyer, diversion program, batterer intervention program - 9%).

2.2 Measures

2.2.1 Parenting Scale

The Parenting Scale (PS) is a 30-item self-report questionnaire developed by Arnold, O’Leary, Wolff, & Acker (1991) to identify problems with parental discipline practices. For each item the parent chooses between two options along a 7-point scale, with the anchors being effective and dysfunctional discipline options. In the original questionnaire the items were grouped into 3 subscales: Laxness, Overreactivity and Verbosity; however, more recent analyses suggest that a three factor Laxness, Overreactivity and Hostility structure is superior (Reitman et al., 2001; Rhoades & O’Leary, 2007; Steele, Nesbitt-Daly, Daniel & Forehand, 2005). The Laxness scale (5 items) measures the extent to which parents notice but do not discipline misbehavior (e.g. “When I want my child to do something, I coax or beg my child to stop”). Overreactivity scale
(5 items) measures the emotional reactivity during disciplining (e.g. When I’m upset or under stress, I am picky and on my child’s back”) (Arnold, O’Leary, Wolff & Acker, 1991). Finally, Hostility (3 items, e.g. “When my child misbehaves, I spank, slap, grab, or hit my child”) measures the likelihood of using physical or verbal force during disciplining (hitting, cursing, name calling) (Rhoades & O’Leary, 2007, See Appendix for the exact items). All 3 scales correlated significantly with several validity measures, including measures of children’s behavioural problems, parent’s depression, and anger expression. The measure’s validity and reliability was well established in several studies (Reitman et al., 2001; Rhoades & O’Leary, 2007; Steele et al., 2005). For the current study, all items have been coded such that a score of 1 indicates effective discipline and 7 indicates ineffective discipline. The internal consistency coefficients were acceptable for Laxness, (α = .72) and Overreactive (α = .85) scales and somewhat low for Hostile scale, (α = .62). The normative information used for clinical significance testing was taken from Rhoades and O’Leary’s (2007) study.

2.2.2 Parenting Alliance Measure

The Parenting Alliance Measure (PAM) is a 20-item self-report questionnaire (Abidin & Konold, 1999) that assesses the disruption of the relationship between parents in the domain of parenting. The questionnaire consists of items that ask about the child’s other parent’s parenting. Items can be scored as two moderately correlated subscales or summed to form a PAM total score. The first subscale is Communication and Teamwork (PAM CT) and covers items assessing fathers’ perceived communication and ability to work as a team with their child’s mother for the good of the child (11 items) (e.g. “My child’s other parent and I are a good team.” ). The second subscale is Respect for Other Parent’s Commitment and Judgement (PAM RCJ) and encompasses items that assess fathers’ respect for their child’s mother’s commitment and judgment with regard to the child (9 items) (e.g. “My child’s other parent pays a great deal of attention to our child”). Respondents rate each item on a 7 point Likert scale, ranging from strongly agree to disagree, with higher scores representing better ability to form parenting alliance with the child’s mother. Both construct and discriminant validity of the PAM measure and reliability are well established and are reported in the manual (Abidin & Konold, 1999) For the current study, internal consistency coefficients were as follows: Total, α = .96, PAM CT, α = .94, and PAM RCJ, α = .89. The correlation between the subscales was .825. The normative
information used for clinical significance testing was taken from the PAM manual (Abidin & Konold, 1999).

### 2.2.3 Aggression Questionnaire

The *Buss-Perry Aggression Questionnaire (AQ)*; Buss & Perry, 1992) is a 29-item self-report questionnaire that measures aggression on 4 scales: physical aggression (9 items, e.g. “I have threatened people I know.”), verbal aggression (5 items, e.g. “When people annoy me, I may tell them what I think of them.”), anger (7 items, e.g. “I flare up quickly but get over it quickly.”), and hostility (8 items, e.g. “Other people always seem to get the breaks.”). Answers are given on a 5-point Likert scale ranging from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). The score for each scale is the total sum of the respondent’s ratings, with high scores signifying higher aggression levels. Construct validity of AQ was demonstrated by correlating the scales with various measures of personality traits (see studies cited by Buss & Perry, 1992). However, in their original study Buss and Durkee (1957) used a sample of college students to obtain normative information and the aggression scores in that population tend to be higher (Buss & Warren, 2000). As a result, normative information was taken from a smaller study with participants’ recruited from 3 various sources (family planning clinic, non academic university employees and university students) with the age range closer to that of ours (ranging from 19 to 55 mean = 33.12; SD = 9.88, N=77) (O’Connor, Archer & Wu, 2001). AQ scales have good internal consistency as reported by O’Connor and colleagues (O’Connor, Archer & Wu, 2001) as well as the manual (Buss & Perry, 1992). For the current sample, internal consistency coefficients were as follows: Total, α = .91, Hostility, α = .81, Anger, α = .85, Verbal, α = .70, Physical, α = .82.

### 2.2.4 Balance of Needs

The *Balance of Needs Measure (BONM)*, Stewart, 2004) is a self-report measure developed to assess fathers’ prioritization of needs within father-child relationship. The measure requires respondents to read two statements and pick the one with which they associate more strongly (see Appendix 2). One of the statements is always more parent-centered and the other is more child-centered. The items comprise two scales: Image/emotional needs scale (18 items, e.g. “I
shouldn’t expect my child to always respect me.”) that measures parents’ ability to balance their psychological needs with those of their children (e.g., needs for respect, admiration, self-aggrandizement) and Personal needs scale (8 items, e.g. “Given my schedule, I cannot afford to spend too much time playing with my child.”) that measures parents’ ability to balance some of the more physically based needs within the parent-child relationship (e.g., need for rest after work vs. helping the child to do homework). In the current study, the internal consistency coefficients for Personal and Image scales were relatively low, at .69 and .59.

2.2.5 Motivation

Participants’ motivation to change was assessed through their responses to the Self-Reported Motivation to Change Scale (Scott, unpublished). This 16-item questionnaire asked men about their attitudes towards treatment (e.g. "It is much better to solve problems by talking to friends or family than by attending a treatment program") and about any denial they may have had about their personal contribution to difficulties in the father-child relationship (e.g. "I am not the one who should be in treatment, my partner or child should"). The internal consistency coefficient was .81.

2.3 Statistical Analyses

In order to get the full picture of the change from pre to post treatment, data were analyzed in several ways including statistical significance tests, evaluation of effect sizes, as well as several methods of assessing practical importance of the treatment effects. The methods are described below.

2.3.1 Statistical significance of change

First, paired samples t-tests were used in order to determine whether pre-treatment and post-treatment scores on each of the scales/subscales were significantly different from each other. Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 17. The significance level was set at 0.05.
2.3.2 Magnitude of Change

In order to examine the magnitude of change from Pre to Post, the effect sizes for the mean differences were computed using Cohen’s (1992) d statistic. The magnitude of the d statistic was interpreted according Cohen’s proposed guidelines for small (0 - 0.29), medium (.30 - .79), and large (>=0.80) effect sizes.

2.3.3 Normative comparison

To evaluate whether or not the post-treatment group was equivalent to the normative population I used the extended Kendall’s approach (Kendall et al., 1999) of equivalency testing proposed by Cribbie and Arpin-Cribbie (2009). These researchers use the Schuirmann-Welch test of equivalence to compare normative population means with the pre-test and post-test clinical group means. This procedure accounts for unequal sample sizes and variances of various comparison and clinical groups. This procedure compares the treated group to the normative population twice: pre and post intervention. Ideally, it is expected that the treated (clinical) group will not be equivalent to the normative group at pre-test and equivalent to the normative group at post-test. The initial step of the procedure involves setting the critical mean difference for declaring two populations equivalent (equivalence interval or +/-δ). Following Cribbie and Arpin-Cribbie’s (2009) recommendation, I used the definitive (δ=1/2 standard deviation of the normative population) and probable (δ= standard deviation of the normative population) equivalence criteria for assessing the equivalence of treated and normative groups. The second step involves comparison of the pre-test clinical group means on all scales to the available normative means using a two-independent samples Schuirmann-Welch t-test. This statistical procedure determines whether or not the pre-test group is statistically different from the normative population on a number of measures. Thus, if the pre-test group means fall outside of +/-δ of the normative mean, the groups are considered not-equivalent. For the measures/scales on which the pre-test group means were significantly different from the normal comparison group means I followed up with the third step. In the third step, the Schuirmann-Welch test was used to compare post-test group means with the normative comparison group means. If on a given measure the post-test group mean fell within +/-δ of the normative comparison mean, the groups were considered equivalent on that measure. All formulas are provided in Appendix 3.
2.3.4 Reliable Magnitude of Change

I examined clinical significance of change on both group and individual levels using Jacobson-Truax (1991) *Reliable Change Index* (RCI) method. Jacobson-Truax method allows for determining whether or not the magnitude of change is statistically reliable by taking into account measurement error. To account for measurement error the first step of this method included calculation of Standard Error of Measurement (See Appendix D for formulas). Given that both internal consistency and test-retest reliability coefficients are used for Standard Error calculation (See Bauer, Labert & Nelson, 2004) I used internal consistency coefficients for measures with no information on test-retest reliability. To calculate the group level RCIs for each measure/scale I divided the difference between pre and post means by the Standard Error of measurement. RCIs greater than +/- 1.96 were considered significant. To evaluate individual progress through therapy I calculated RCIs separately for each individual. Furthermore, following Jacobson-Truax recommendation I then proceeded to classify individuals into 4 groups. Men who had significant RCIs and who at the beginning of intervention scored within clinical range but by the end of intervention scored outside of clinical range on a particular measure were considered *recovered* on that measure. Men whose RCIs were significant but who continued to score within clinical range were classified as *improved*. Men with significant RCIs who scored outside of clinical range at pre treatment and within clinical range post treatment were considered *deteriorated*. Men with significant RCIs whose scores at the beginning of treatment were better than their scores at end of treatment were classified as *worsened*. The rest were classified into *no change* group. The clinical range was determined by +/-1 Standard deviation from the normative sample mean as there was no clinical cut-off information available for most of our measures. For reliability coefficients and cut-off scores refer to Table 1. For the numbers of people in each group see Table 2.
Table 1.

Normative information for Parenting Alliance Measure, Parenting Scale and Aggression Questionnaire

<table>
<thead>
<tr>
<th>Scales</th>
<th>Normative Mean (SD)</th>
<th>N</th>
<th>Reliability</th>
<th>Clinical Significance Cut-off (CSC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>80.8 (13.6)</td>
<td>345</td>
<td>r = .63</td>
<td>67.2</td>
</tr>
<tr>
<td>RCJ</td>
<td>37.8 (6.4)</td>
<td>345</td>
<td>r = .58</td>
<td>31.4</td>
</tr>
<tr>
<td>CT</td>
<td>43.1 (7.8)</td>
<td>345</td>
<td>r = .62</td>
<td>35.3</td>
</tr>
<tr>
<td>PS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over.</td>
<td>2.97 (0.90)</td>
<td>453</td>
<td>α = .80</td>
<td>3.87</td>
</tr>
<tr>
<td>Hostile</td>
<td>1.59 (0.75)</td>
<td>453</td>
<td>α = .83</td>
<td>2.34</td>
</tr>
<tr>
<td>Laxness</td>
<td>2.61 (0.86)</td>
<td>453</td>
<td>α = .85</td>
<td>3.47</td>
</tr>
<tr>
<td>AQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>64.39 (17.32)</td>
<td>62</td>
<td>α = .92</td>
<td>81.71</td>
</tr>
<tr>
<td>Hostility</td>
<td>16.81 (6.18)</td>
<td>62</td>
<td>α = .86</td>
<td>22.99</td>
</tr>
<tr>
<td>Anger</td>
<td>15.57 (5.88)</td>
<td>62</td>
<td>α = .89</td>
<td>21.45</td>
</tr>
<tr>
<td>Verbal</td>
<td>14.05 (3.78)</td>
<td>62</td>
<td>α = .77</td>
<td>17.83</td>
</tr>
<tr>
<td>Physical</td>
<td>18.43 (7.16)</td>
<td>62</td>
<td>α = .86</td>
<td>25.59</td>
</tr>
</tbody>
</table>
2.3.5 Treatment Motivation as a moderator of change

In order to avoid excessive statistical tests (thus increasing probability of type I error) analysis of treatment moderation began with a visual examination of data. Specifically, I dichotomized the motivation scores into high and low (with high being anything greater than or equal to 2.9 out of 4) and then graphed high and low motivation for each measure with pre-test scores on the X axis and Post-test on Y. For variables that appeared to demonstrate a Treatment by Motivation interaction I used regression analysis to test whether or not treatment motivation was a moderator of change. I entered pre-test scores and Motivation into the regression equation followed by the pre-test score by Motivation interaction. To avoid multicollinearity effects between pre-treatment scores and Motivation, and the pre-treatment Scores by Motivation interaction Pre-Test scores on each scale and motivation were centered to produce a revised sample mean of zero.
3 Results

In this section results are grouped by measure; thus results for both statistical and clinical significance are presented together. Paired t-test scores, effect sizes, group RCIs and Equivalency testing for all scales/subscales are presented in Table 3. Individual RCIs as well as proportions of participants who improved, recovered or deteriorated are included in Table 2.

3.1 Parenting Alliance

As shown in Table 3, there were statistically significant improvements from pre- to post-intervention on the Parenting Alliance Measure Communication and Teamwork (PAM CT), Respects Other Partner’s Commitment and Judgment (PAM RCJ) and Total scales. The magnitude of the effect sizes for the mean differences was medium for the PAM RCJ and PAM Total scales and small for the PAM CT subscale. The results of Equivalency testing indicate that PAM Total and PAM RCJ group means were statistically different from the normal population means at pre-test and equivalent to the normal population means at post-test, with the groups being declared definitely equivalent. The group RCIs were not significant for any of the Parenting Alliance subscales. In terms of individual treatment response, change was most apparent for PAM RCJ scale, where 36% (8) of the 22 individuals who scored in the clinical range at pre-test were classified as recovered at post-test. For PAM Total and PAM CT scales 19% out of 21 and 9.5% out of 21 respectively were classified as recovered. Limited deterioration was noted. Specifically, 1 person (2%) out of 53 deteriorated (scored outside of clinical range at pre- and in the clinical range at post-test) across all assessments.

3.2 Parenting Scale

There were significant pre- to post-test changes on of all the Parenting Scale (PS) subscales. The magnitude of the effect sizes for the mean differences was medium for the PS Overreactivity subscale and small for the PS Laxness and Hostility subscales. The results of Equivalency testing indicate that group means on PS Laxness and PS Hostility subscales were statistically different from the normal population means at pre-test and equivalent to the normal population means at post-test, with the groups being declared definitely equivalent. Group means on the overreactivity scale were not found to be different from normative population at pre-test. Group
Table 2.

*Frequency (percent) of changes in different outcome categories at post-treatment*

<table>
<thead>
<tr>
<th></th>
<th>Within clinical range pre-treatment</th>
<th>Within normative range pre-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RCI significant</td>
<td>RCI Not significant</td>
</tr>
<tr>
<td></td>
<td>Improved</td>
<td>Recovered</td>
</tr>
<tr>
<td><strong>PAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>4(19)</td>
</tr>
<tr>
<td>RCJ</td>
<td>0</td>
<td>8(36)</td>
</tr>
<tr>
<td>CT</td>
<td>0</td>
<td>2(10)</td>
</tr>
<tr>
<td><strong>PS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overreactive</td>
<td>0</td>
<td>6(43)</td>
</tr>
<tr>
<td>Hostile</td>
<td>2(13)</td>
<td>5(31)</td>
</tr>
<tr>
<td>Laxness</td>
<td>2(10)</td>
<td>3(15)</td>
</tr>
<tr>
<td><strong>AQ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1(5)</td>
<td>5(25)</td>
</tr>
<tr>
<td>Hostility</td>
<td>0</td>
<td>6(27)</td>
</tr>
<tr>
<td>Anger</td>
<td>0</td>
<td>3(20)</td>
</tr>
<tr>
<td></td>
<td>Improved</td>
<td>Worsened</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>**Significant RCI ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not Significant RCI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Verbal</strong></td>
<td>0</td>
<td>3(30)</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td>1(7)</td>
<td>2(13)</td>
</tr>
<tr>
<td><strong>BONM</strong></td>
<td>9(13)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Image</strong></td>
<td>1(1.4)</td>
<td>1(1.4)</td>
</tr>
</tbody>
</table>

* For BONM, due to the lack of normative information we were only able to classify participants into those who made reliable change (Improved or worsened) and those who did not make change.
Table 3.

_T-Tests, Group RCIs, and Equivalency Testing_

<table>
<thead>
<tr>
<th>Measure</th>
<th>N</th>
<th>Pre mean (SD)</th>
<th>Post mean (SD)</th>
<th>T-test</th>
<th>p</th>
<th>Cohen’s d</th>
<th>RCI</th>
<th>Equivalency Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAM</td>
<td>74</td>
<td>76.52 (16.98)</td>
<td>82.26 (15.19)</td>
<td>-0.775</td>
<td>0.00</td>
<td>0.36 (medium)</td>
<td>0.491</td>
<td>Different at pre-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Definitely Equivalent at post-test</td>
</tr>
<tr>
<td>CT</td>
<td>74</td>
<td>41.82 (9.89)</td>
<td>44.66 (9.16)</td>
<td>-3.293</td>
<td>0.02</td>
<td>0.30 (medium)</td>
<td>0.417</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td>RCJ</td>
<td>73</td>
<td>34.65 (7.90)</td>
<td>37.80 (6.89)</td>
<td>-4.215</td>
<td>0.00</td>
<td>0.43 (medium)</td>
<td>0.538</td>
<td>Different at pre-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Definitely Equivalent at post-test</td>
</tr>
<tr>
<td>AQ</td>
<td>63</td>
<td>72.27 (19.72)</td>
<td>68.76 (19.86)</td>
<td>1.877</td>
<td>0.065</td>
<td>0.18 (small)</td>
<td>-0.515</td>
<td>Different at pre-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Probably equivalent at post-test</td>
</tr>
<tr>
<td>Hostility</td>
<td>63</td>
<td>20.23 (6.21)</td>
<td>18.54 (6.06)</td>
<td>2.462</td>
<td>0.01</td>
<td>0.28 (small)</td>
<td>0.965</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td>Physical</td>
<td>62</td>
<td>20.89 (7.56)</td>
<td>20.25 (7.77)</td>
<td>0.952</td>
<td>0.345</td>
<td>0.08 (small)</td>
<td>-0.169</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td>Verbal</td>
<td>63</td>
<td>14.21 (3.57)</td>
<td>13.26 (3.42)</td>
<td>2.230</td>
<td>0.029</td>
<td>0.27 (small)</td>
<td>0.370</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td>Anger</td>
<td>62</td>
<td>17.22 (6.27)</td>
<td>16.89 (6.54)</td>
<td>0.478</td>
<td>0.634</td>
<td>0.06 (small)</td>
<td>0.119</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td>PS</td>
<td>75</td>
<td>2.73 (1.38)</td>
<td>2.32 (1.25)</td>
<td>2.783</td>
<td>0.003</td>
<td>0.31 (medium)</td>
<td>0.965</td>
<td>Not different at pre-test</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>Mean (SD)</td>
<td>t</td>
<td>p</td>
<td>Effect Size</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
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<td>-----------</td>
<td>------</td>
<td>------</td>
<td>-------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laxness</td>
<td>74</td>
<td>3.00 (1.20)</td>
<td>2.041</td>
<td>0.045</td>
<td>.20 (small)</td>
<td>0.457 Different at pre-test Definitely Equivalent at post-test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hostility</td>
<td>72</td>
<td>1.87 (1.08)</td>
<td>3.755</td>
<td>0.00</td>
<td>.26 (small)</td>
<td>0.614 Different at pre-test Definitely Equivalent at post-test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BONM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>70</td>
<td>6.17 (2.65)</td>
<td>5.842</td>
<td>0.00</td>
<td>.69</td>
<td>0.954</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>73</td>
<td>.85 (1.16)</td>
<td>1.729</td>
<td>0.09</td>
<td>.20</td>
<td>0.171</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For BONM, due to the lack of normative information we were only able to classify participants into those who made reliable change (Improved or worsened) and those who did not make change.
RCIs were not significant for any of the Parenting Scale Subscales. In terms of individual treatment response, for PS Overreactivity scale, 43% (6) of the 14 individuals who scored in the clinical range at pre-test were classified as recovered at post-test. For PS Laxness scale, 10% (2) out of 20 individuals who were in the clinical range were classified as improved and 15% (3) as recovered. For, PS Hostility, scale 12.5% (2) individuals were classified as improved and 31% (5) as recovered. Finally, there were 3% (2 out of 61) individuals classified as deteriorated for PS Overreactivity Scale and 9% (5 out 54) for PS Laxness Scale.

3.3 Aggression Questionnaire

Changes from pre to post were significant for two of the four subscales of the Aggression Questionnaire (AQ) - Verbal and Hostility scales. The magnitude of the effect sizes for the mean differences was small for all the subscales and the Total scale of AQ. The results of Equivalency testing indicate that group mean on AQ Total was statistically different from the normal population mean at pre-test and equivalent to the normal population mean at post-test, with the groups being declared probably equivalent. None of the AQ subscales’ means for our sample were significantly different from the normal population means at pre test. Group RCIs were not significant for any of the AQ scales. In terms of individual treatment response, the change was most apparent for the AQ Hostility scale, where 30% (6) of the 20 individuals who scored in the clinical range at pre-test were classified as recovered at post-test. However, on the same scale 2 (5%) out of 43 individuals were classified as deteriorated at post-test. For the rest of the AQ subscales the number of men classified as recovered ranged from 1 to 3, with equivalent rates of deterioration. For the AQ Total scale, 25% (5) of the 20 individuals who scored in the clinical range at pre-test were classified as recovered at post-test and 5% (1) were classified as improved; 9% (4) of 43 were classified as deteriorated on AQ Total Scale.

3.4 Balance of Needs

The pre- to post-test changes were significant on both Image and Personal scales of Balance of Needs Measure (BONM). The magnitude of the effect size for the mean differences was large for BONM Image scale and small for BONM Personal scale. Due to lack of normative information for BONM, I was unable to conduct equivalence testing. Group RCIs were not
significant for the two scales of BONM. Thirteen percent (9) of the 70 individuals showed reliable positive change on the BONM Image scale and 1 out of 73 men showed reliable positive change and another showed reliable negative change on the BONM Personal scale. Given lack of normative information I was unable to classify these reliably changing individuals as improved, recovered or deteriorated.

3.5 Individual change considered in total

To gain a clearer picture of individuals who remained in the clinical range at the end of treatment, post-hoc analyses examined whether or not the individuals who demonstrated treatment resistance did so across measures of parenting, co-parenting and aggression (excluding the BONM due to lack of normative information). Results were examined in two different ways. First, I examined the number of individuals who scored in the clinical range on at least one scale or subscale of one post-treatment measure (PS Laxness, PS Overreactive, PS Hostile, PAM RCJ, PAM CT, AQ Anger, AQ Hostility, AQ Verbal, and AQ Physical). Because subscales within one domain are likely to be correlated, I next calculated the number of individuals who scored in the clinical range on at least one scale of two or three different measures (PS, PAM and AQ). For the breakdown by number of scales and measures see Table 4. I found that at the end of the treatment 59% of respondents were in the clinical range at least 1 (1/11) scale, 19% were in the clinical range on at least 1 scale from two different measures and 3% were in the clinical range on at least 1 scale from 3 different measures. Furthermore, I found that 2-9% of individuals scoring outside of clinical range at the beginning demonstrated reliable deterioration (moved into clinical range at the end).

3.6 Motivation as a mediator of change

Visual examination of scatterplots suggested that motivation was a possible moderator of change on PS Hostile scale, PAM RCJ scale and Hostile, Verbal and Physical subscales of AQ. Multiple regression analysis was conducted with pre-test score on the Parenting Scale, initial motivation and the interaction of these two variables (Table 5). The procedure was repeated three more times with pre-test scores on the PAM RCJ scale (Table 6), and the Hostility (Table 7) and Physical subscales of the AQ (Table 8). Analyses revealed that motivation was a moderator of change from pre- to post-test scores on the Physical Aggression and Hostility scales of the AQ;
the results for the PAM RCJ and PS Hostile scales approached significance. The standardized B and t values that emerged from this analysis are presented in Tables 5 to 8.

Figures 1 and 2 represent pre to post change on Physical and Hostility scales of the AQ at high and low levels of motivation using the SPSS graph function. In order to graph the relationship motivation was dichotomized, with values lower than 2.9 classified as low motivation and all the values equal to or higher than 2.9 as high motivation. These equations were derived from the standardized B values. According to this figure all individuals experienced change from Pre to Post treatment, however the change appears to be greater for those who had had lower motivation initially.
Table 4.

*Number of individuals who scored in the clinical range post-treatment by number of scales/measures (N=98)*

<table>
<thead>
<tr>
<th></th>
<th>1 measure</th>
<th>2 measures</th>
<th>3 measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 scale N (%)</td>
<td>20 (20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Scales N (%)</td>
<td>9 (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 scales N (%)</td>
<td>5 (5)</td>
<td>1 (1)</td>
<td></td>
</tr>
<tr>
<td>4 scales N (%)</td>
<td>1 (1)</td>
<td>5 (5)</td>
<td></td>
</tr>
<tr>
<td>5 Scales N (%)</td>
<td>1 (1)</td>
<td>6 (6)</td>
<td></td>
</tr>
<tr>
<td>6 Scales N (%)</td>
<td></td>
<td>4 (4)</td>
<td></td>
</tr>
<tr>
<td>7 Scales N (%)</td>
<td></td>
<td>1 (1)</td>
<td></td>
</tr>
<tr>
<td>7 scales N (%)</td>
<td></td>
<td>2 (2)</td>
<td></td>
</tr>
<tr>
<td>8 scales N (%)</td>
<td></td>
<td></td>
<td>2 (2)</td>
</tr>
<tr>
<td>10 scales N (%)</td>
<td></td>
<td></td>
<td>1 (1)</td>
</tr>
<tr>
<td>At least one scale N (%)</td>
<td>58 (59)</td>
<td>19 (19)</td>
<td>3 (3)</td>
</tr>
</tbody>
</table>

Note. There were total of 11 scales and 3 measures (AQ - 5 Scales, PAM – 3 Scales, PS – 3 Scales)
Table 5.

*Linear Regression predicting intervention outcome based on Post PS Hostile*

<table>
<thead>
<tr>
<th>Standardized B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.137</td>
</tr>
<tr>
<td>Pre PS Hostile</td>
<td>.107</td>
</tr>
<tr>
<td>Motivation</td>
<td>1.1177</td>
</tr>
<tr>
<td>Pre PAM RCJ X Motivation</td>
<td>-.994</td>
</tr>
</tbody>
</table>

* p <=0.05, ** p <=0.01, *** p <= 0.001

Table 6.

*Linear Regression predicting intervention outcome based on Post PAM RCJ*

<table>
<thead>
<tr>
<th>Standardized B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.770</td>
</tr>
<tr>
<td>Pre PAM RCJ</td>
<td>1.088</td>
</tr>
<tr>
<td>Motivation</td>
<td>2.192</td>
</tr>
<tr>
<td>Pre PAM RCJ X Motivation</td>
<td>-2.006</td>
</tr>
</tbody>
</table>

* p <=0.05, ** p <= 0.01, *** p <= 0.001  +p <= 0.07
Table 7.

*Linear Regression predicting intervention outcome based scores on Post AQ Hostility*

<table>
<thead>
<tr>
<th></th>
<th>Standardized B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.209*</td>
<td></td>
</tr>
<tr>
<td>Pre AQ Hostility</td>
<td>2.679</td>
<td>3.415***</td>
</tr>
<tr>
<td>Motivation</td>
<td>.658</td>
<td>2.143*</td>
</tr>
<tr>
<td>Pre AQ Hostility X Motivation</td>
<td>-2.137</td>
<td>-2.685**</td>
</tr>
</tbody>
</table>

* p <= 0.05, ** p <= 0.01, *** p <= 0.001

Table 8.

*Linear Regression predicting intervention outcome based scores on Post AQ Physical*

<table>
<thead>
<tr>
<th></th>
<th>Standardized B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.782**</td>
<td></td>
</tr>
<tr>
<td>Pre AQ Physical</td>
<td>3.146</td>
<td>4.366***</td>
</tr>
<tr>
<td>Motivation</td>
<td>.572</td>
<td>2.445*</td>
</tr>
<tr>
<td>Pre AQ Physical X Motivation</td>
<td>-2.405</td>
<td>-3.372**</td>
</tr>
</tbody>
</table>

* p <= 0.05, ** p <= 0.01, *** p <= 0.001
4 Discussion

The present study evaluated the effectiveness of treatment for domestically violent and abusive fathers across several areas of functioning, including parenting alliance, balance of needs, general levels of hostility and aggression, and over-reactive parenting discipline. Because of the importance of treatment outcomes to potential victims of men’s violence, this study employed various methods to assess change including conventional inferential statistics as well as clinical significance tests. Findings of the present study provide evidence for treatment effectiveness on a number of dependent variables demonstrated across at least several methods of change assessment. More specifically, evidence of change across methods could be seen in fathers’ ability to form an alliance with their child’s mother (PAM), their overall discipline strategies (PS), and their ability to prioritize their child’s needs (BONM). Change was much less evident in men’s report of general levels of anger and aggression (AQ). Magnitude of change and proportion of improved clients were consistent with other studies of parenting intervention, which is particularly notable given the high risk and reluctant nature of the population of men served. Low motivation did not act as a barrier to change, at least among men successfully retained in treatment; instead, low motivation was associated with somewhat greater treatment-related gains. Each of these results is discussed in turn, followed by limitations and direction for future study.

4.1 Changing Maltreatment Risk Mechanisms

It was originally hypothesized that the Caring Dads treatment program would change various factors implicated in abuse mechanisms. Our results indicate that the treatment was successful in changing several of the hypothesized variables/factors. The program was particularly effective in improving parenting alliance between fathers and their children’s mothers. Our results indicate that while, at the beginning, participants had much lower parenting alliance scores than the standardization sample, their scores became equivalent to those of the normative sample after they completed treatment. The examination of the effect sizes and RCIs indicated the greatest change in respect for the commitment and judgment of children’s mothers. Change in this area was significant and the improvement was large enough to have practical importance. Change in men’s perceived ability to communicate and work together with their partner was not as large, albeit significant.
The change in fathers’ ability to value their child’s mother as a parent has important implications, as disrupted parental alliance and low levels of respect for the other parent are associated with poor parenting practices and more negativity in interactions with children (Davies, Struge-Apple, & Cummings, 2004; Feinberg, Kan & Hetherington, 2007). Despite its connection to parenting and child outcomes, parenting alliance is rarely addressed by either parenting or batterer intervention programs (Feinberg, 2003). The amount of change in fathers’ ability to respect their partners’ commitment and judgment demonstrated in the present study supports inclusion of parenting alliance as an important intervention target.

There was also reasonable evidence of change across the three dimensions of parent discipline practice assessed. These results suggest that by the end of the program the fathers become more able to manage their emotions in response to child’s misbehavior and use more appropriate discipline strategies. The results also suggest that the fathers’ ability to be more consistent as well as less negative and hostile in their parenting increased and became indistinguishable from that of normative population. Overall, consistent with our hypothesis, the changes on parenting scale suggest that the program is able to reduce fathers’ inappropriate discipline use and improve their ability to parent. Furthermore, I compared our results with other intervention studies that employed The Parenting Scale as a measure of inappropriate discipline strategies. For example, in their comprehensive metanalytic review of the Triple P Parenting Program efficacy studies, Nowak and Heinrichs (2008) report that the program was effective across 33 studies (community as well as high-risk samples) with an average effect size for parenting scale being medium (.55). The effect sizes for improvement in parenting found in the present study were comparable, albeit lower (small to medium ranging from 0.20 to 0.31), which is not surprising given the high-risk nature of our population. The present study, along with other parenting program evaluation studies, demonstrates a consistent ability of parenting programs to improve parenting discipline strategies and reduce hostile and overreactive responses to children’s misbehavior.

Change was also notable in men’s ability to balance their psychological needs (needs for self-aggrandizement, image, self-esteem and emotional support) with the needs of their children. This is evident as post- treatment, men reported a much better ability to balance their image/emotional needs with their children’s needs compared to their pre-treatment report, with effect size being large. However, despite the large effect size of change, less confidence can be placed on this
finding due to psychometric properties of the measure: both subscales of the BONM had low internal consistency, suggesting limited reliability of the measure in this study and a high probability of measurement error obscuring the results. Furthermore, lack of normative data made the examination of clinical significance of the finding impossible. Therefore, although the finding may have important implications (due to association between needs misprioritization and abusive parenting, see Scott & Crooks, 2004), it has to be interpreted with caution. Change was not evident in another domain of needs prioritization, the ability to balance personal needs with those of their children (e.g. playing with the child despite being tired after work). The lack of change in this domain could be attributed to the fact that the scale I employed to measure it was found to have less support for its concurrent and convergent validity compared to the psychological needs scale, possibly because the items on this scale are more transparent, producing more socially desired responding (Stewart, 2004; p.50).

The one area in which change was less evident was in men’s general aggression. Multiple aspects of aggression were measured, including verbal, physical, hostility, and anger. Although the change in the overall aggression score reached marginal clinical significance, it was not statistically significant. In addition, when the subscales were examined separately, the pre- to post-change in scores of self-reported physical aggression and anger were not clinically significant. The only areas where there were significant improvements from pre- to post-intervention were self-reported hostility and verbal aggression, with the effect sizes being small. There are several possible explanations for the lack of change in fathers’ aggression. One reason could be the fact that the program is targeting only one of the multiple components of aggression (Tate et al., 1995). According to General Aggression Model (outlined in Anderson & Bushman, 2002) aggression is a complex phenomenon that consists of several behavioural, physiological (arousal), affective, and cognitive components that have developed as a result of interactions between biological, environmental, psychological, and social factors, resulting in fairly stable aggression trait. Buss and Durke’s aggression questionnaire employed in our study measures behavioural aspects (verbal and physical aggression), physiological arousal component (anger), and cognitive component (hostility) (Buss & Perry, 1992,). Given that the Caring Dads program deals with aggression primarily through a CBT approach it is not surprising that the most changes are seen in the cognitive component of aggression (i.e. hostility scale) and least changes are seen in the physiological arousal aspect of it (anger component). The findings suggest that
the fathers are beginning to reappraise their hostile cognitions (e.g. “I feel that people are laughing at me behind my back”).

The small amount of change on the Aggression measure could also be attributed to the fact that the program mostly addresses aggression in either the context of parenting (which is measured by PS Overreactivity scale to some extent) or in the context of parenting alliance (measured by PAM). It is then not surprising that the most change in the aggression has occurred pertaining to these two specific contexts, i.e. that fathers report being less hostile and overreactive when parenting and less hostile toward their child’s other parent.

Finally, the participants’ aggression scores prior to treatment did not differ significantly from the normative population. Therefore, it is possible that men’s responses were influenced by social desirability bias. Given the transparency of the items on the aggression questionnaire, it is possible that these men are not self-reporting their actual levels of aggression, producing lower than expected aggression scores at pre-treatment.

### 4.2 Change at Individual Level

The second purpose of this study was to critically investigate the clinical significance of changes made by participants in intervention. Summarizing across several domains of functioning assessed, the proportion of participants who began in the clinical range, demonstrated reliable change and, therefore, were classified as either recovered or improved ranged from 9 to 43% depending on the domain (Balance of Needs excluded). It is important to note here that while the number of individuals classified as recovered in the area of aggression was similar to that in the other areas, there were more individuals classified as deteriorated in that area, suggesting that the intervention was less effective in addressing overall levels of aggression. This trend is consistent with the group-level results for aggression.

The individual-level changes found in our study are consistent with other studies of RCIs in other populations. For example in a study of a CBT intervention for chronic pain, between 14% and 33% of patients demonstrated reliable change (Morley, Williams, Hussain, 2007) and in a study of change in postnatal depression reliable change was achieved for 30% of the sample (Matthey, 2001). Our results are also consistent with the few existing parenting program studies
that employed RCI to evaluate change. For example, one study included a group of 66 high-risk mother participants in a home-based parenting program (the mothers were referred to the program by health clinics, social workers or child protection services and reported high levels of parenting stress and need for support with parenting). The study reported that 5-9% (depending on outcome measures) of mothers had reliable gains in their parenting behaviors (Asscher et al., 2008). Another study evaluated parenting intervention effectiveness among 379 parents of whom at least one spouse was a US Air Force employee (Thompson et al., 1997). Most parents self-referred to the program because of parent-child conflict; none of the parents had prior history of child abuse. The authors reported that 19-30% (depending on outcome measure) of participants made reliable gains on both parent and child measures (Thompson et al., 1997).

It is also noteworthy that the rates of deterioration (i.e., individuals who scored outside the clinical range at the beginning and moved into the clinical range at the end) in the present study were low (2-9%) and generally consistent with those reported in other parenting programs. For example, Asscher and colleagues (2008) reported deterioration rates of 2-15% and Thompson et al. (1997) reported that 3.4-10% of clients deteriorated. It is also important to note that, unlike many intervention studies, our sample includes fairly severe, high-risk fathers, many of whom were mandated or strongly encouraged by child protective services to participate in the program. Obtaining rates of clinically significant change that are equivalent to other parenting studies is therefore a significant achievement.

Although rates of change in men attending Caring Dads were equivalent to other studies of intervention for parenting and other problems, there were still a small number of fathers who showed no treatment response. Thus, individual-level post-intervention results show that a small percentage (3%) of fathers were in the clinical range of functioning in their ability to use appropriate discipline, their ability to form a parenting alliance with their child’s mother and their overall levels of anger and aggression and 19% indicated problematic functioning in at least two of the three domains. Although the finding that some men made change across measures and some remained in the clinically concerning range is consistent with other treatment studies, the implications for this population are potentially quite different. Treatment programs for violent and abusive behaviours typically have victim safety as one of their primary treatment targets (e.g. Scott & Crooks, 2006), and men who have completed treatment and showed no change are
reasonably judged to be an ongoing safety risk to victims. Thus, the finding of no change has implications for both men and for potential victims of abuse. The percentage of treatment-resistant fathers identified in this study indicates that additional treatment systems that deal with these resistant men need to be put in place. One of the most common recommendations for effective monitoring and addressing of risks these men may pose to their children and partners is an increased communication and coordination across agencies (intervention programs for maltreating men, child protection and battered women advocacy agencies) (Allen, 2006; Douglas & Cunningham, 2008; Pennington-Zoellner, 2009). For fathers who continue to pose risk to their children an alternative, more individualized treatment options may be considered. In addition, the agencies need to work together to contain the opportunity for these fathers to offend by legally removing parenting rights, preventing contact or allowing supervised access only, and requiring that perpetrators serve a period of imprisonment.

4.3 Motivation as a Moderator of Outcome

Finally, the current study investigated the importance of motivation as a moderator of treatment success. Contrary to hypotheses, results of our regression analyses demonstrated that motivation served as a moderator of change on several aggression scales such that fathers whose initial motivation was low had greater amount of change on these scales. Given these results, as well as the fact that low- and high-motivated fathers have similar progress on most measures, it appears that low motivation at the start of the program does not impede progress. Therefore, it is, perhaps, reasonable to suggest that fathers who are mandated to participate in treatment programs are not precluded from making progress by their low motivation levels. These results are also consistent with Skowron and Reinemann’s (2005) meta-analytic study, which found that treatment effects did not vary as a function of whether or not participants were mandated for treatment. However, it is important to note that early sessions of the Caring Dads program include motivational enhancement components to ensure that men have sufficient trust and engagement levels to be able to re-examine their fathering (Scott & Crooks, 2004, 2007). Furthermore, individuals who dropped out of the program were not included in our analyses and it is likely that the relationship between motivation and treatment success in these individuals looks different.
4.4 Limitations and Implications for Future Research

The study demonstrated that group interventions can provide benefits in terms of improved parenting alliance, prioritization of child’s needs and decrease in overreactive and hostile discipline strategies. However, there are a number of limitations of this study that need to be considered in interpreting the findings. First, our study lacked a comparison group. Second, with no follow-up assessments, it is not clear whether the treatment improvements observed were maintained beyond treatment termination. Third, our outcome measures were limited to self-report questionnaires. As a result, there was a potential problem of social desirability bias obscuring our results. This is especially important in this population, as many of the fathers are court mandated for treatment and are trying to make a good impression on the group counsellors.

Another significant limitation of the study is that, for practical reasons, I was not able to include individuals who did not complete the program. Therefore, our study could be underestimating the number of treatment-resistant individuals. Finally, one of the largest limitations of the present study is that not all of the measures used to assess change were standardized and manualized. This caused a number of problems with clinical significance testing given that RCI and Equivalency testing normative information had to be obtained from the available previously published studies. These studies had relatively small sample sizes and low sample generalizability. As a result, I cannot be fully confident in our classification of individuals into the clinical and non-clinical range on some of the measures (especially the Aggression Questionnaire).

To further evaluate the utility and effectiveness of group-based treatment for maltreating fathers a more methodologically rigorous study is required. The study should include a randomized controlled comparison group and a follow up data collection point several months after the end of the group. In addition, the individuals who drop out of the program need to be studied carefully with respect for their motivation and reasons for dropping out of program. Furthermore, to provide better support for program’s effectiveness, the change should be assessed in a variety of ways in addition to self report measures (i.e. reoffending, behavioural observations, interviews with child’s mother), so that possible social desirability bias may be avoided. In order to gain a better understanding of practical implications of treatment change, the measures with available normative information should be used for normative comparisons. Finally, the process of change
needs to be examined more closely. Given that a number of individuals improved while a significant portion remained unchanged in at least one domain of functioning, it would be useful to examine whether or not these individuals differ from each other on a number of variables. In other words a number of potential treatment outcome moderators needs to be examined.

4.5 Conclusion

The present study evaluated the effectiveness of treatment for domestically violent and abusive fathers across several areas of functioning, including parenting alliance, balance of needs, hostility and aggression and over-reactive discipline using both conventional inferential statistical methods as well as clinical significance tests. First, the results indicate that the fathers were able to make a number of gains throughout the treatment. The men improved their ability to respect their partner’s commitment and judgment in parenting context, reduced hostile and overreactive responses to children’s misbehaviour, and enhanced their ability to balance their psychological needs with the needs of their children. The program was also able to successfully address aggression pertaining to parenting and co-parenting contexts as it was able to successfully reduce men’s self-reported overreactivity to children’s misbehaviour and frustration with their partner’s parenting. Given the parenting-specific focus of the current intervention program it appears to be less effective in targeting more general levels of hostility and aggression. Overall, these findings were comparable to those of other parenting intervention studies and support further inclusion of parenting alliance, needs prioritization, and parenting discipline strategies as important intervention targets for parenting programs. In addition, despite the high-risk potentially treatment resistant nature of our sample the levels of clinical significance achieved in the program were similar to other parenting studies. Although as a group men demonstrated improvements post-treatment, there was variability in treatment response within the group with a small number of fathers showing treatment resistance in all domains. Given the nature of this population even the small percentage of treatment resistant fathers requires that additional treatment and prevention systems are put in place. Finally, given the variability of treatment response and its practical implications, the study results emphasize the importance of employing multiple methods, including both clinical and statistical significance, for evaluating intervention programs.
References


Appendix

Appendix A: Information letter and Consent form

Information Letter

Dear Participant:

There are few intervention programs available that specifically aim to help men learn to be better fathers for their children. *Caring Dads* is one of the few such programs available. This program hopes to help men modify their knowledge, behaviours and attitudes so that they can develop healthier and safer relationships with their children. This program is in its early stages of development, and we are conducting research to determine if it is indeed helpful. You have been invited to participate in this research because you have been referred to this program.

If you choose to participate, data will be collected in a number of ways. First, you will be asked to complete a number of self-report questionnaires. Today you will receive one package of questionnaires to complete. You will receive similar packages to complete at the end of your time at *Caring Dads*. Each one will take approximately 30 minutes to complete. Because this is a research project, you may choose not to answer any question that makes you feel uncomfortable.

Second, researchers will look at the information already collected by program staff at *Caring Dads*. In particular, researchers will look at demographic data (e.g., your age, how many children you have), information about your referral and situation (e.g., who referred you to *Caring Dads*) and reports of your progress through group.

Third, researchers may contact the person who referred you to the *Caring Dads* program six months after its completion. During this contact, questions will be asked about their impression of the program and about whether the feedback provided has been helpful in making decisions with your family.

The mother of your children will also be invited to participate in research, though her participation and yours are completely independent. In other words, your partner will be invited to become part of this research regardless of your decision to, or not to, become involved.

Information collected for research purposes will be kept completely confidential with three important exceptions. Like staff at the *Caring Dads* program, researchers need to report to police if we feel that you are intending to harm yourself or someone else, and to child protection if we suspect that a child in your care is at-risk of being abused or neglected. In addition, if you or your family is already involved with child protective services, we may need to speak to your worker about incidents of child abuse that have already been investigated. To protect the confidentiality of the information we collect, all data will be coded using a confidential ID number. A list of numbers and corresponding names will be kept in a locked drawer until we can ‘match-up’ before and after assessments and your own
and your partner’s reports, after which it will be destroyed. Information will be pooled for statistical analysis and reporting so that a single individual can never been identified.

There is no known risk to your participation or lack of participation in this study. It will not affect your progress at Caring Dads by either helping or hindering your chances of being invited to future groups. It will also have no effect on any involvement that you may have with the legal system. You may withdraw from the study at any time and without any consequence.

Results of this study will be used to make decisions about the future development of the Caring Dads program. A formal report will be prepared for members of the community and a research paper will be sent to a scholarly journal. A copy of results will be made available to all participants who are interested.

To indicate whether you do or do not consent to participate in this research, please fill in the form that is attached to this letter. Please keep a copy of this letter for your records. If you have any questions, feel free to call me at the number listed below. Thank you very much for your time.

Katreena Scott, Ph.D.

Assistant Professor, 416-978-0971
Consent Form

Investigator: Katreena Scott, Ph.D
OISE/UT
416-978-0971

I understand that the purpose of this study is to examine the efficacy of the Caring Dads program.

I understand that participation will involve assessment before and after completing Caring Dads and that each assessment will include self-report questions about my parenting and about my relationship with my child and his or her mother and the researchers will also gather information from my file and from the person who referred me to the program.

I understand that my decision to participate or not participate in this study will not affect my status in the Caring Dads program in any way.

I understand that I can withdraw from this study at any time and that I can choose not to answer any question that I wish.

I understand that information collected will be kept confidential except where required by law. Accordingly, all reports of suicidal or homicidal intent will be reported to police and all concerns about child abuse will be reported to Children’s Aid.

Please indicate whether or not you agree to participate in this study.

_____ Yes, I would like to participate in this study

_____ No, I would not like to participate in this study

Signature: __________________________
Appendix B: University of Toronto Study Ethics Approval Form

University of Toronto
Office of the Vice-President, Research
Office of Research Ethics

PROTOCOL REFERENCE #20034 September 1, 2009

Prof. Katreena Scott
Dept. of Human Development
and Applied Psychology
Ontario Institute for Studies in Education
of the University of Toronto
252 Bloor Street West
Toronto, ON M5S 1V6

Dear Prof. Scott:

Re: Your research protocol entitled, “Evaluation of the Efficacy of the Caring Dads Intervention Program” by Prof. K. Scott

We are writing to advise you that a member of the Social Sciences, Humanities & Education Research Ethics Board has granted approval to an amendment (received July 15, 2009) to the above referenced research study under the REB’s expedited review process. This amendment involves a pilot investigation of 5 father-child dyads of 2 hours each and composed of 4 tasks, with researchers observing these interaction tasks. Also, a new graduate student has been added to the study team as a co-investigator, Victoria Lishak.

The following documents (revised versions received August 13, 2009) have been approved with this amendment: Observation Task Information and Consent for Fathers (App F), Child Assent Forms (App G), and Task Interruption Policy (App H).

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events should be reported to the Office of Research Ethics as soon as possible.

Best wishes for the successful completion of your project.

Yours sincerely,

[Signature]

Marianna Richardson
Research Ethics Coordinator
Appendix C: Balance of Needs Measure (BONM), Parenting Alliance Measure (PAM), Parenting Scale (PS), Agression Questionnaire (AQ) and Motivation Questionnaire

BONM

Please read each of the following pairs of statements carefully. From each pair, choose the ONE statement that you agree with the most (even if it is difficult to choose). Indicate your choice by writing the letter (A or B) that corresponds to your choice in the space provided. Please do not select both choices.

1) _____ A. Having a child gives me a sense of satisfaction with my life.  
   B. My child should have many people in his/her life that he/she thinks are important.

2) _____ A. Having alone time with my partner is an important part of my day.  
   B. My child needs me to spend time with him/her doing fun activities.

3) _____ A. It is important to me that my child follows in my footsteps.  
   B. My child should wear whatever he/she feels most confident in, even if I think it looks bad.

4) _____ A. I will be a better parent if I take care of my needs first.  
   B. My child’s needs should always come first.

5) _____ A. I shouldn’t expect my child to always respect me.  
   B. I feel best about myself when my child does well.

6) _____ A. I should try my best to meet my child’s demands of me.  
   B. My child should understand when I have had a bad day.

7) _____ A. My child should be close to me and love me.  
   B. My child shouldn’t hear my personal concerns.

8) _____ A. When I am busy, I should try to find things to occupy my child’s time.  
   B. My child can occupy himself/herself when I am busy.

9) _____ A. It makes me feel good to hear people comment on how well I am bringing up my child.  
   B. It shouldn’t bother me that my child does not recognize the things I do for him/her.

10) ____ A. Given my schedule, I cannot afford to spend too much time playing with my child.  
   B. I think that playing with my child is an important part of my day.

11) ____ A. My child does not have to agree with me.  
    B. My child should show me respect.
12) ____ A. My child’s need for attention fluctuates throughout the day and I should be available whenever he/she needs me.
   B. As a parent, there are things that I need to get done and I can’t always be available to give my child the attention he/she wants.

13) ____ A. My child should appreciate the things that I do for him/her.
   B. My child shouldn’t hear my worries and concerns.

14) ____ A. I should try not to do work when I think that my child may distract me.
   B. My child should clean up after himself/herself without me having to repeatedly ask.

15) ____ A. I would like my child to think that I am the most important person in his/her life.
   B. My child’s feelings should always come before my own.

16) ____ A. I should be able to pursue hobbies/activities that interest me.
   B. My child should be supported in his/her activities, even if it interferes with my own hobbies/activities.

17) ____ A. My child should follow our family’s traditions and/or cultural practices.
   B. My child is an individual who may choose to follow his/her own path.

18) ____ A. When I am busy, I need to have time to myself without my child interrupting me.
   B. When my child has a quiz at school, my priority should be to help him/her study.

19) ____ A. It’s okay if my child is not good at the things that I did well when I was a kid.
   B. I don’t want people to think that I am a bad parent.

20) ____ A. My child needs to understand that he/she can’t always do what he/she wants.
   B. I need to understand that my child’s needs are important no matter how small they are.

21) ____ A. I don’t like some of the styles of clothing kids wear, but it’s okay with me if my child chooses to wear them.
   B. As a parent, I should have a say in the style of clothing that my child wears.

22) ____ A. My child should be praised for what he/she does, even if he/she isn’t very good at it.
   B. My child should understand that I sometimes need quiet time to myself after a long day at work so that I can relax.

23) ____ A. My child is an important source of affection and support for me.
   B. When I am angry, I should stop and consider how my behavior is affecting my child.
24) ____ A. When the needs of my child conflict with my own, it is important that my child’s needs are met first.
   B. When the needs of my child conflict with my own, it is important that my needs are met first.

25) ____ A. It frustrates me when my child doesn’t do what I say.
   B. I can understand why my child gets frustrated with my rules.

26) ____ A. Even if I am really tired and have a headache, I should make time for my child.
   B. I shouldn’t always have to change my schedule around in order to meet my child’s wishes.

27) ____ A. My child should be able to pick his/her own friends.
   B. As a parent, I should pick who my child plays with.

28) ____ A. I should consider my child’s wishes before I ask him/her to do something for me.
   B. I should be able to have time away from my child so that I can do things I enjoy.

29) ____ A. I often rely on my child to cheer me up when I am feeling down.
   B. I shouldn’t expect my child to appreciate what I do for him/her.

30) ____ A. My child needs to learn that I have needs too.
   B. It’s okay that my child doesn’t understand that I have needs too.

31) ____ A. It frustrates me when my child acts up in front of my friends.
   B. If my child is happy with his/her performance, then I am happy with his/her performance too.

32) ____ A. My child’s appearance reflects on me as a parent.
   B. I should praise my child even when he/she is not doing something well.

33) ____ A. Compromising with my child is important for his/her development.
   B. As a parent, my child should listen to what I say without questioning my judgement.

34) ____ A. It’s frustrating when my child doesn’t follow through on what’s asked of him/her.
   B. My child is just a kid, so it’s ok if he/she doesn’t do what is asked of him/her all the time.

35) ____ A. After a day at work, I need some peace and quiet at home.
   B. My child needs to be able to make noise in the house.

36) ____ A. The things that I have to do each day are more important than what my child has to do.
   B. My child’s need to play is very important.

37) ____ A. My child should realize that I cannot buy everything that he/she wants because I am already sacrificing a great deal for him/her.
   B. My child should have my full attention whenever he/she needs it.
Parenting Scale

1. PARENTING SCALE

2. At one time or another, all children misbehave or do things that could be harmful, that are “wrong”, or that parents don’t like. Example include hitting someone, whining, not picking up toys, forgetting homework, having a tantrum, lying, wanting a cookie before dinner, running into the street, arguing back and coming home late.

Parents have many different ways or styles of dealing with these types of problems. Below are items that describe some styles of parenting.

For each item, fill in the circle that best describes your style of parenting during the past two months with the child you identified as the one with whom you have the most difficult relationship.

SAMPLE ITEM:

3. At meal time…

   I let my child decide how much to eat. 0---0---●---0---0---0---0---0 I decide how much my child eats.

4. When I’m upset or under stress…

   I am picky and on my child’s back. 0---0---0---0---0---0---0---0 I am no more picky than usual.

5. When my child misbehaves…

   6. I usually get into a long argument with my child. 0---0---0---0---0---0---0---0 I don’t get into an argument.

   7. I threaten to do things that…

       I am sure I can carry out. 0---0---0---0---0---0---0---0 I know I won’t actually do.

   8. I am the kind of parent that…

       set limits on what my child is allowed to do. 0---0---0---0---0---0---0---0 lets my child do whatever he/she wants.

9. When my child misbehaves…
I give my child a long lecture. 0---0---0---0---0---0---0 I keep my talks short and to the point.

10. When my child misbehaves…

I raise my voice or yell. 0---0---0---0---0---0---0 I speak to my child calmly.

11. When I want my child to stop doing something…

I firmly tell my child to stop. 0---0---0---0---0---0---0 I coax or beg my child to stop.

12. After there’s been a problem with my child…

I often hold a grudge. 0---0---0---0---0---0---0 things get back to normal quickly.

13. When we’re not at home…

I handle my child the way I do at home. 0---0---0---0---0---0---0 I let my child get away with a lot more.

14. When my child does something I don’t like…

I do something about it. 0---0---0---0---0---0---0 I often let it go.

15. When there is a problem with my child…

things build up and I do things I don’t mean to do. 0---0---0---0---0---0---0 things don’t get out of hand.

16. When my child misbehaves, I spank, slap, grab, or hit my child…

never or rarely. 0---0---0---0---0---0---0 most of the time.

17. When my child doesn’t do what I ask…

I often let it go or end up doing it myself. 0---0---0---0---0---0---0 I take some other action.

18. When I give a fair threat or warning…

C. I often don’t carry it out. 0---0---0---0---0---0---0 I always do what I said.

19. If saying “No” doesn’t work…
I take some other kind of action. 0--0--0--0--0--0--0--0

I offer my child something nice so he/she will behave.

20. When my child misbehaves…

I handle it without getting upset. 0--0--0--0--0--0--0--0

I get so frustrated or angry that my child can see I’m upset.

21. If my child misbehaves and then acts sorry…

I handle the problem like I usually would. 0--0--0--0--0--0--0--0

I let it go that time.

22. When my child misbehaves…

I rarely use bad language or curse. 0--0--0--0--0--0--0--0

I almost always use bad language.

23. When I say my child can’t do something…

I let my child do it anyway. 0--0--0--0--0--0--0--0

I stick to what I said.

24. When my child does something I don’t like, I insult my child, say mean things, or call my child names…

never or rarely. 0--0--0--0--0--0--0--0

most of the time.

25. If my child gets upset when I say “No”…

I back down and give in to my child. 0--0--0--0--0--0--0--0

I stick to what I said.
Aggression Questionnaire

About You

Indicate how uncharacteristic or characteristic each of the following statements is in describing you with the following scale:

1 = extremely uncharacteristic of me
2 = somewhat uncharacteristic of me
3 = neither uncharacteristic or characteristic of me
4 = somewhat characteristic of me
5 = extremely characteristic of me

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all like me</th>
<th>Very like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Some of my friends think I am a hothead</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. If I have to resort to violence to protect my rights, I will</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. When people are especially nice to me, I wonder what they want</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. I tell my friends openly when I disagree with them</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. I have become so mad that I have broken things</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6. I can't help getting into arguments when people disagree with me</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7. I wonder why sometimes I feel so bitter about things.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8. Once in a while, I can't control the urge to strike another person</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>9. I am an even-tempered person</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>10. I am suspicious of overly friendly strangers</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>11. I have threatened people I know</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>12. I flare up quickly, but get over it quickly</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>13. Given enough provocation, I may hit another person</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>14. When people annoy me, I may tell them what I think of them</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>15. I am sometimes eaten up with jealousy</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>16. I can think of no good reason for ever hitting a person</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>17. At times I feel I have gotten a raw deal out of life</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>18. I have trouble controlling my temper</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>19. When frustrated, I let my irritation show</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>20. I sometimes feel that people are laughing at me behind my back</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>21. I often find myself disagreeing with people</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>22. If somebody hits me, I hit them back</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>23. I sometimes feel like a powder keg ready to explode</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>24. Other people always seem to get the breaks</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>25. There are people who pushed me so far that we came to blows</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>26. I know that &quot;friends&quot; talk about me behind my back</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>27. My friends say that I am somewhat argumentative</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
Parenting Alliance Measure

These questions are rated on a 5-point scale. Your first reaction to each statement should be your answer.

<table>
<thead>
<tr>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

1. My child’s other parent enjoys being alone with our child..............

2. During pregnancy, my child’s other parent expressed confidence
   in my ability to be a good parent........................................

3. When there is a problem with our child, we work out a good
   solution together...........................................................

4. My child’s other parent and I communicate well about our child.....

5. My child’s other parent is willing to make personal sacrifices to
   help take care of our child.............................................

6. Talking to my child’s other parent about our child is something
   I look forward to...........................................................

7. My child’s other parent pays a great deal of attention to our child...

8. My child’s other parent and I agree on what our child should and
   should not be permitted to do...........................................

9. I feel close to my child’s other parent when I see him or her play
   with our child...............................................................
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>My child’s other parent and I are a good team.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>12.</td>
<td>My child’s other parent believes I am a good parent.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>13.</td>
<td>I believe my child’s other parent is a good parent.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>14.</td>
<td>My child’s other parent makes my job of being a parent easier.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>15.</td>
<td>My child’s other parent sees our child in the same way I do.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>16.</td>
<td>My child’s other parent and I would basically describe our child in the same way.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>17.</td>
<td>If our child needs to be punished, my child’s other parent and I usually agree on the type of punishment.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>18.</td>
<td>I feel good about my child’s other parent’s judgment about what is right for our child.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>19.</td>
<td>My child’s other parent tells me I am a good parent.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
<tr>
<td>20.</td>
<td>My child’s other parent and I have the same goals for our child.</td>
<td>SA A</td>
<td>NS D SD</td>
</tr>
</tbody>
</table>
Motivation Questionnaire

Your Views about the Program

Please indicate whether you agree or disagree with the following items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think that this program might be useful for me</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>2. I don't trust that counselors here will work towards the best interests of me and my family</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>3. Treatment programs like this are a waste of my time</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>4. Being in a counseling program is only going to make my problems worse</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>5. I see the value of parenting education and treatment programs for men</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>6. Parenting in my situation is a difficult job and I expect that I might need some help now and then</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>7. I may need help to improve my parenting and keep myself on track</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>8. It is much better to solve problems by talking to friends or family than by attending a treatment program</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>9. I am not the one who should be in treatment, my partner or child should</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>10. My relationship with my child is as good as it can be</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>11. I have been thinking that there are things I could do to improve my relationship with my child</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>12. Difficulties in the relationship between me and my child have nothing to do with me, and everything to do with other things</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>13. I don't have a problem with my behaviour, there is nothing I really need to change</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>14. Other people make my behaviour out to be much worse than it really is</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>15. I have been unfairly identified and judged by the system as being &quot;a problem&quot;</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>16. I sometimes wish that I could change myself in ways that would make me a better parent for my child</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
</tbody>
</table>
Appendix D: Formulas

1. Normative Comparison with equivalency testing Formulas (taken from Cribbie & Arpin Cribbie, 2009)

Step 1. Determining whether the mean of the Pre Treatment group is statistically different from the normal comparison group

$H_0$: $\mu_{pre} = \mu_{NC}$

$$t_w = \frac{\bar{X}_{pre} - \bar{X}_{NC}}{\sqrt{\frac{s^2_{pre}}{n_{pre}} + \frac{s^2_{NC}}{n_{NC}}}}$$

$$df_w = \frac{\left(\frac{s^2_{pre}}{n_{pre}} + \frac{s^2_{NC}}{n_{NC}}\right)^2}{\frac{s^4_{pre}}{n^2_{pre} (n_{pre} - 1)} + \frac{s^4_{NC}}{n^2_{NC} (n_{NC} - 1)}}$$
Step2. Determining whether the posttest mean is equivalent to the normal (definitive equivalence criterion where \(\delta=1/2\) standard deviation of the normative population and probable equivalence criterion where \(\delta=\) standard deviation of the normative population)

\[H_{o1}: \mu_{post} - \mu_{NC} > \delta \quad H_{o2}: \mu_{post} - \mu_{NC} < -\delta\]

\[t_{W1} = \frac{(\bar{X}_{post} - \bar{X}_{NC}) - \delta}{\sqrt{\frac{s_{post}^2}{n_{post}} + \frac{s_{NC}^2}{n_{NC}}}}\]

\[t_{W2} = \frac{(\bar{X}_{post} - \bar{X}_{NC}) - (-\delta)}{\sqrt{\frac{s_{post}^2}{n_{post}} + \frac{s_{NC}^2}{n_{NC}}}}\]

\[df_w = \frac{\left(\frac{s_{post}^2}{n_{post}} + \frac{s_{NC}^2}{n_{NC}}\right)^2}{\frac{s_{post}^4}{n_{post}^2 (n_{post} - 1)} + \frac{s_{NC}^4}{n_{NC}^2 (n_{NC} - 1)}}\]
2. **Reliable Change Index (RCI) formulas** (taken from Jacobson & Truax, 1991; also see Bauer et al., 2004)

1. Individual RCIs (using total individual pre and post scores \(X_{\text{pre}}, X_{\text{post}}\) and standard deviation of normative comparison group \(S_{\text{NC}}\))

\[
\text{RCI} = \frac{X_{\text{post}} - X_{\text{pre}}}{S_{\text{diff}}}
\]

\[S_{\text{diff}} = \sqrt{2(S_E)^2}\]

using test-retest reliability \(r_{xx}\)

\[S_E = S_{\text{NC}} \sqrt{1-r_{xx}}\]

or using internal consistency \(\alpha\)

\[S_E = S_{\text{NC}} \sqrt{1-\alpha}\]

2. Group RCIs (using group pre and post means \(M_{\text{pre}}, M_{\text{post}}\) and standard deviation of normative comparison group \(S_{\text{NC}}\))

\[
\text{RCI} = \frac{M_{\text{post}} - M_{\text{pre}}}{S_{\text{diff}}}
\]

\[S_{\text{diff}} = \sqrt{2(S_E)^2}\]

using test-retest reliability \(r_{xx}\)

\[S_E = S_{\text{NC}} \sqrt{1-r_{xx}}\]

or using internal consistency \(\alpha\)

\[S_E = S_{\text{NC}} \sqrt{1-\alpha}\]
Appendix E: Figures

Figure 1. Physical Aggression (AQ Physical) Scores at High and Low Levels of Motivation.
Figure 2. Hostility Scores (AQ Hostile) at High and Low Levels of Motivation.