THE EFFECTS OF A TOUCH INTERVENTION ON NURTURING TOUCH, FAMILY FUNCTIONING, AND CHILD BEHAVIOR

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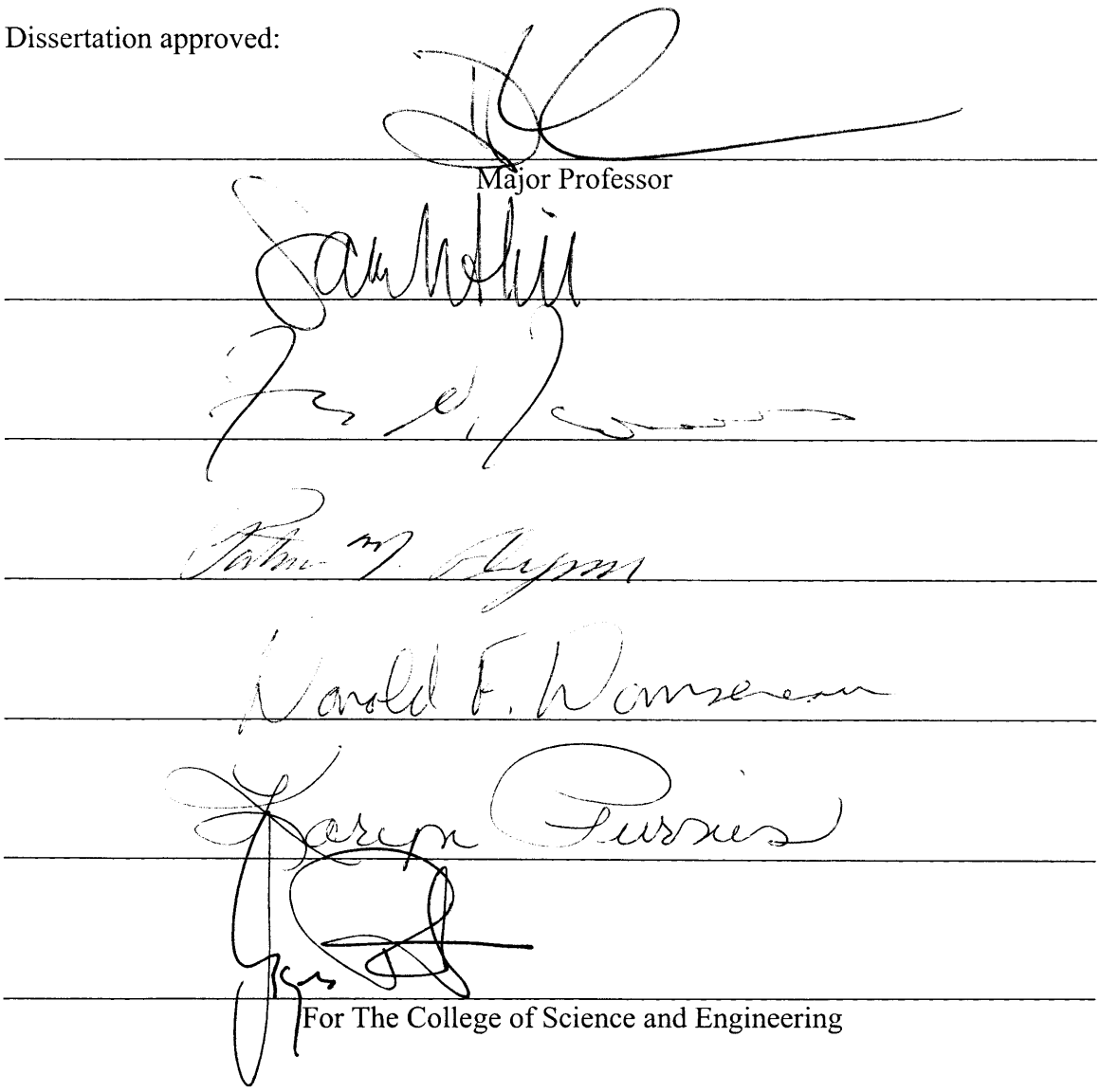

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The Effects of a Touch Intervention on Nurturing Touch, Family Functioning, and Child Behavior

Touch is important to humans. It is the first sense to develop in the womb (Kandel, Schwartz, & Jessel, 2000) and may be the last sense that is lost before a person dies (Field, 2001). In fact, touch is necessary for life. In an infamous study conducted by Emperor Frederick II of Germany, newborn babies were taken from their mothers and were given to nurses who fed them but did not talk to them or touch them. His purpose was to determine the natural or inborn language of the babies. He never found out, though, because all of the babies died before they learned to speak (Simmons, 2008). This is an extreme example of the importance of touch; however, many other examples of the importance of touch exist in the literature (Harlow, 1958; Field, 2001; Robles-De-La-Torre & Hayward, 2001). The purpose of the current research is to increase the amount of nurturing touch in families through the use of a touch intervention. In the current study, the term *touch* will refer to touch that is not harmful or hurtful unless otherwise specified. The following section includes a brief overview of many of the types of touch referred to in this paper. Next is a section on touch research, including the consequences of touch deprivation and the benefits of touch, in both animal and humans. Next, there is a discussion of family functioning and its relationship to touch and behavior problems, and the final section will discuss the need for a touch intervention.

Types of Touch

Several types of touch have been identified in the literature and include massage (Field, Diego, & Hernandez-Reif, 2007), touch to communicate emotions and feelings (Alagna, Whitcher, & Fisher, 1979), playful touches (Field, 1999), and unintentional touch

(Polan & Ward, 1994). Massage is the topic of much of the research on touching (e.g., Field, 2001; Field et al., 2007; Simmons, 2008). Studies on massage have examined the physiological and psychological benefits of touch with infants, children, adolescents, adults, and the elderly (e.g., Field, 2001). Forms of touch that communicate emotions and feelings include hugs, kisses, cuddling, holding hands, and handshakes. Types of playful touch include tousling hair, gentle pokes, and gentle tickling. Research shows that these types of touches, especially when coupled with appropriate words, can strengthen family relationships and set a basis for happier and more resilient individuals (Main, 1990; Pollitt, Eichler, & Chan, 1975). Inadvertent and unintentional touch includes touches such as bumping and brushing against another person during the normal course of daily activities. Research on inadvertent and instrumental touch exists in the literature, particularly with premature infants and those diagnosed as failure-to-thrive (Polan & Ward, 1994). Research on the effects of various types of touch, as well as touch deprivation, both in human and animal models illustrate the importance of touch.

Touch Research

Animal Studies

Consequences of Touch Deprivation. Animal research demonstrates various effects of touch deprivation. Although these studies are somewhat confounded with partial or global maternal deprivation, the findings still contribute to an understanding of the effects of touch deprivation. Research has shown that both short and long-term separation of the infant from the mother has profound consequences. Several studies demonstrate the effects of short-term separation. In a study conducted with rhesus monkeys, Spencer-Booth and Hinde (1971) found that the effects of brief separations from mothers during infancy had effects two years

later on the infants' behavior. According to Gandleman (1992), deprivation of maternal touch modifies primate infants' physiology and behavior. He found that these primates would not approach strange objects and were less active than monkeys with no deprivation. These changes are seen immediately and long after the separation, even if the mother and infant were reunited.

Harlow and colleagues studied long-term separation in their well-known research with monkeys (Harlow 1958; Harlow, Harlow, & Suomi, 1971). Harlow's work demonstrated that the deprivation of maternal touch has profound effects on young primates and can induce severe psychological pathology (Harlow et al., 1971). Subsequent research has found that not only were behaviors affected, but that the structure of the brain was altered such that the number of neurons in the hippocampal region of the brain, which is the area of the brain involved in regulating emotions, was significantly reduced in these monkeys (Nelson & Bloom, 1997). Harlow (1958) also reported that dogs raised alone in padded cells, with no contact from humans other than cleaning and feeding, became aggressive and vicious. Other studies report that rat pups deprived of a mother's touch do not grow normally and are more susceptible to stress (e.g. Schanberg, Evoniuk, & Kuhn, 1984).

Benefits of Touch in Animals. Touch is beneficial to animals. Harlow et al. (1971) demonstrated that the severe psychological pathology induced by depriving infant primates of maternal contact for six months can be somewhat alleviated through the nurturing touch of three month old primates who persistently cling to the older monkeys that have been raised in isolation. Several studies have shown that brushing rat pups reversed the negative effects (growth retardation and physiological stress) of maternal separation, but only when the brush strokes mimicked the pattern and pressure used by the mother licking her pups (Evoniuk,

Kuhn, & Schanberg, 1979; Pauk, Kuhn, Field, & Schanberg, 1986). In a study conducted by Wilson (2001), rats were exposed to a stressful field task under three different conditions. They were either tested alone, with another rat but separated by a clear partition (through which they could see, smell and hear), or with another rat with which they were allowed full contact. The rats tested alone and the rats that were tested in a pair, but divided by a partition, had significantly higher stress levels than rats who were tested in a pair and were able to touch each other (Wilson, 2001). In canines it has been found that systematically groomed dogs displayed lower heart rates than non-groomed canines (McGreevy, Righetti, & Thomson, 2005). Research with human participants also demonstrates the importance of touch.

Human Studies

Consequences of Touch Deprivation. For humans, the "natural experiment" of children in the orphanages in Romania, who began to be adopted in the late 1980's has provided one of the most striking examples of touch deprivation. Ceausescu, the communist president of Romania from 1965 to 1989, intended to dramatically increase the population in Romania. Contraception was banned and families were financially penalized if they did not meet the quota of having five children. This resulted in the abandonment of many children whose families did not have the resources to raise them. The number of children in the more than 600 orphanages swelled to 300,000 following the execution of Ceausescu. Due to the lack of workers in the orphanages and the huge influx of abandoned children, orphanage workers often left these children in cribs with very little food and no human contact. The physical and developmental outcomes for these children were very bleak and included problems such as disease, attachment problems, lead poisoning, depression, autistic-like

symptoms, and other psychoses (Ames, 1997; Fisher, Ames, Chisholm, & Savoie, 1997; Jenista, 2000; Johnson, 2000a; Miller, 2004; Rutter, Kreppner, O'Connor, & ERA Study Team, 2001). Physical and developmental outcomes for children who have experienced chronic neglect or abuse mirror what has been seen in the brain. An overpruning of synapses in the right side of the orbitofrontal cortex occurs, which in turn inhibits the ability to regulate and modulate emotion when these children are later exposed to stress (Schore, 1996).

Other research has demonstrated a link between a lack of touch and negative outcomes in humans. Research on children with failure-to-thrive (FTT), in which infant growth is severely delayed, found that mothers with FTT children use different types and amounts of touch with their infants than mothers with typically developing children. For example, Pollitt et al. (1975) found that affectionate physical interaction, such as kissing and caressing, was done less by mothers of FTT infants than other mothers, but that slapping (which is considered negative touch) was more frequent in the FTT group. In addition, a study conducted by Polan and Ward (1994) provided evidence that mothers' of children with FTT gave less physical touch. The authors examined differences in several types of touch and found that the most frequently observed types of touch were matter-of-fact touch during feeding and unintentional touch during play. Mothers with typically developing babies provided more of these types of touch than the mothers with FTT babies. This study also found that the mothers of infants with FTT provide less proprioceptive stimulation during play, which encourages infant growth. Finally, results of the study provide evidence that lack of maternal touch relates to the severity of malnutrition and the degree of organic contribution to the condition of FTT in infants. In a slightly different type of research on

touch, Robles-De-La-Torre and Hayward (2001) discussed the importance of touch and concluded that losing the sense of touch is catastrophic in that it makes everyday tasks such as walking and holding objects almost impossible. In summary, lack of touch has negative effects on humans, and these negative effects are both physical and psychological.

Benefits of Touch in Humans. Research has shown that touch is important for physical health. For infants, physical contact such as touching, cuddling, and handling not only helps to ensure healthy social development, but is also critical to physical development and survival (Field, 2001, Montagu, 1978). Premature babies are especially sensitive to the positive effects of these types of touch (Field, Diego, Hernandez-Reif, Schanberg, & Kuhn, 2003; Montagu, 1986). Building on these findings, Davis (2005) found that the feelings of security with parental touch during childhood was related to lower levels of reported stress during adulthood.

Physiological benefits of touch have also been examined in the literature. Research shows that skin-to-skin contact between mothers and infants increases levels of oxytocin in the mother and lessens outward signs of physiological stress in the infants (Uvnas Moberg, 2003). In addition, Park (2008) found that oxytocin levels were elevated in participants receiving touch, but only when an intentional act of trust followed the touch. In child psychiatric patients, massage therapy induced sleep that is more organized and that lowered the cortisol and norepinephrine levels, which are two indicators of stress (Field, Morrow, Valdeon, Larson, Kuhn, & Schanberg, 1992). A study conducted by Ditzen and colleagues (2007) found a relationship between physical contact by a romantic partner prior to exposure to a stressful situation and significantly lower levels of cortisol and lower heart rate after the stressful situation. Other studies of massage have shown increases in serotonin levels (Field,

Kilmer, Hernandez-Reif, & Burman, 1996; Ironson, Field, Scafidi, & Hashimoto, 1996). Muftizade (2006) found that the metamorphic technique (a light touch to the spinal reflex points of the feet, hands and head) reduced blood pressure and heart rate when used on adult female participants. People who are sick or injured also physiologically benefit from nurturing touch. Woods (1999) found that therapeutic touch was associated with a decrease in cortisol in Alzheimer patients. Buschmann, Hollinger-Smith, and Peterson-Kokkas (1999) report that the effects of pain and depression in older adult burn patients lessened after touch therapy. Several other studies have found that physical contact is associated with decreases in heart rate, blood pressure, and the experience of pain during a medical procedure (Fishman, Turkheimer, & DeGood, 1995; Wendler, 2003).

Touch is important for psychological and social health in children and adolescents. According to Main (1990), touch indicates to the infant that the caregiver is present and that the infant is safe and secure during stressful situations. Triplett and Arneson (1979) compared the outcomes of verbal only comforting with tactile comforting in infants and children between three days and forty-four months of age in a hospital setting. They found that combining verbal and tactile comforting was significantly more effective in reducing distress in children than when using verbal comforting alone. Specifically, children in the verbal and tactile group were comforted 88% of the time whereas children in the verbal comforting group were comforted only 17.5% of the time. Clements and Tracy (1975) examined the effects of both tactile and verbal reinforcement during an arithmetic and attention task for boys who were emotionally disturbed. Overall, they found that the tactile reinforcement significantly affected boy's behaviors. Specifically, tactile reinforcement alone and tactile with verbal reinforcement led to better scores on the attention task than either

verbal only or no reinforcement. Tactile with verbal reinforcement had the greatest effect on the arithmetic task. These studies provide evidence that touch is both an effective means of comfort and also a powerful reinforcer for children. Aquino and Lee (2000) argue that children learn expression of positive emotion through appropriate touch. In regards to autistic children, it was also found that touch therapy reduced stereotyped behavior (Field et al., 1986). A comparison of French and American teenagers found an association between amount of touching and aggressive behavior such that the French teenagers displayed a greater amount of friendly touching and less aggressive behavior than Americans teenagers (Field, 1999).

Research demonstrates the psychological and social benefits of touch in adults. Friendly touch communicates warmth and increases feels of affection (Alagna et al., 1979; Fisher, Rytting, & Heslin, 1976). Coan, Schaefer, and Davidson (2006) reported that for women who are under stress, holding their husband's hand provides immediate stress relief. The results of several studies indicate that people leave larger tips at a restaurant when touched briefly by the waiter on the hand or shoulder (e.g. Crusco & Wetzel, 1984). The results of several studies found that participants are more willing to comply with requests when a brief touch accompanies the request (Hornik, 1992; Kleinke, 1977; Nannberg & Hansen, 1994; Patterson, Powell, & Lenihan, 1986). It has also been found that when people are touched briefly and unobtrusively they are more likely to be open about their thoughts and feelings (Jourard & Rubin, 1968) and show greater gratitude (Burgoon, Walther, & Baesler, 1992).

Horton, Clance, Sterk-Elifson and Emshoff (1995) found that the use of touch in therapy created feelings of closeness and caring from the therapist, communicated

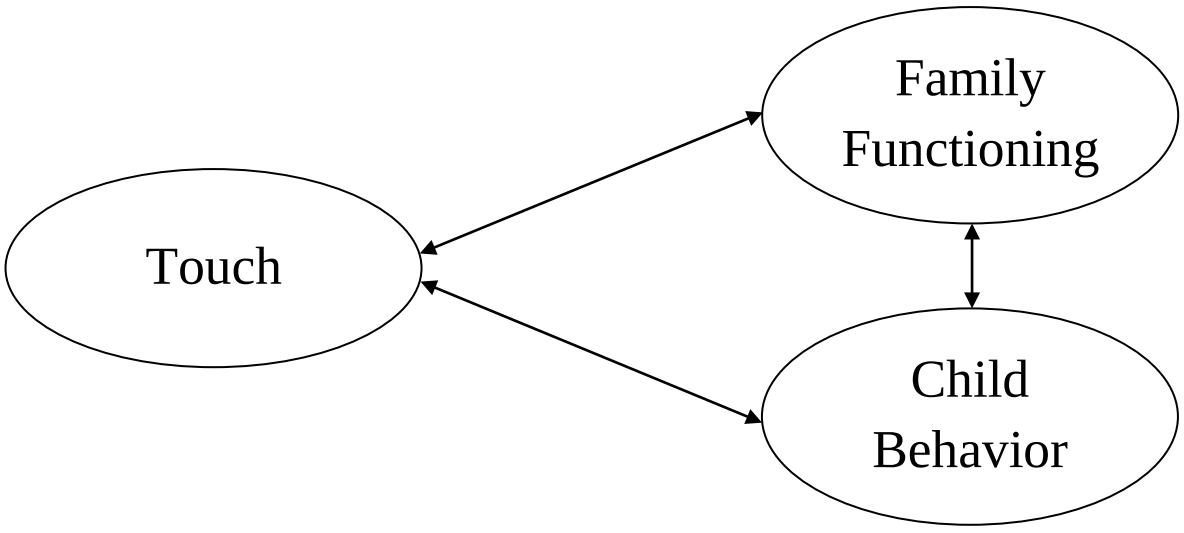
acceptance, helped to create a new mode of relating, and gave patients feelings of comfort, strength, healing and assurance. In addition, Geib (1998) found that the clients' communication with the therapist regarding touch in therapy was vital to the patient's ability to experience the positive effects of touch.

Contextual Research on Touch

As has been discussed, there are many benefits to positive, nurturing touch. However, many families have limited touch experiences and, therefore, do not reap the numerous physical, mental, and emotional benefits. Fortunately, becoming aware of opportunities for touch and creating a path and plan for making changes in families can ameliorate this situation. The purpose of the current research is to change touch practices within the family and thereby influence overall family functioning and child behaviors (see Figure 1).

Figure 1

Theoretical Relationship Among Variables



Family Functioning

Conducting research on family functioning is important in order to better understand the process by which families respond to challenges and also to understand what leads some families to successfully navigate the challenges that confront them and others to become dysfunctional (O'Brien, 2005). Family systems theory maintains that the family functions as a whole and that the members of the family and their relationships impact each other in a continuous and reciprocal manner (e.g., Cox & Paley, 1997; Minuchin, 1988). Family systems functioning has been extensively examined from a clinical perspective within the field of family therapy (Bricklin & Elliot, 2005; Cierpka, Thomas, & Sprenkle, 2005; Saleebey, 1997; Slee, 1996).

A principal characteristic of functional families is family cohesiveness. Family cohesiveness can be defined as a family's sensitive, harmonious, and synchronous style, and has been found to be associated with increased marital satisfaction and more maternal and paternal sensitivity (Felman, Masalha, & Nadam, 2001; McHale, 1995). Family intrusiveness is the perception that other family members have non-legitimate involvement in each other's lives. In contrast to family cohesiveness, family intrusiveness has been associated with non-optimal parent/child interaction and higher family conflict (Fincham, 1998; McHale & Cowan, 1996). Parent behaviors toward the children lay the foundation for the overall family process, and several studies have found a significant association between the behaviors of the mother and father toward their children and family functioning (Belsky, Crnic, & Gable, 1995; Feldman, 2000; Johnson, 2001; Russell & Russell, 1994). It has also been found that the quality of parenting is enhanced by moments of shared marital pleasure (Belsky, 1981), whereas the level of sensitive parenting is reduced by a distressed marital relationship

(Lindahl, Malik, 1999; McHale & Cowen, 1996). A more detailed discussion of family functioning from a systems perspective is beyond the scope of the current paper. For a more in depth discussion, see Broderick (1993).

Touch in the Family

While other factors contribute to family functioning, the primary factor of interest in the current study is touch. Touch occurs within the context of family functioning. Affectionate and nurturing touch is often a unique type of touch given to children by parents as compared with other caregivers, such as daycare workers and teachers (Miller & Holditch-Davis, 1992). An infant's physical, emotional, and social development benefits from this affectionate and nurturing touch (Tronick, 1995).

Kangaroo Care (KC) is a method used in some health care settings for infants born prematurely and who cannot yet regulate their own body temperature. Often hospitals keep the premature infants in incubators while they grow and develop. KC involves a mother holding the naked infant next to her chest, underneath her clothes in order to regulate the infant's body temperature. Feldman, Weller, Sirota, and Eidelman (2003) tested several hypotheses about KC that were developed based on a family systems perspective. Results suggest that the mothers who used KC were more sensitive, less intrusive, had more parent-infant reciprocity, and had infants who displayed fewer negative emotions than mothers who did not use KC. In addition, the father-infant dyad displayed these same positive characteristics. Moreover, the relational style of the family as a whole was less intrusive and more cohesive following the KC (Feldman et al., 2003). Several other studies on KC also found that mothers reported lower parental stress, more positive feelings, and a better sense

of the parenting role after using KC (Affonso, Bosque, Wahlberg, & Brady, 1993; Bier, Ferguson, Morales, Liebling, Archer, Oh, & Vohr, 1996).

Child Behavior and Touch

Both family functioning and touch have been connected to child behavior problems. The following sections will discuss findings from the literature that connects child behavior to touch and also to family functioning. Specifically, many links between infant behavior and touch have been examined in the literature. Research has found that touch and handling has had a positive effect on both maternal and infant behavior during periods of maternal separation early in an infant's life (Weizman et al., 1999; White-Traut & Nelson, 1998). Field (1995) found that massage therapy in premature infants increased self-regulation. In contrast, lower maternal contact and less self-regulation in infants may lead to less synchrony in the relationship between mothers and premature infants (Lester, Hoffman, & Brazelton, 1985). The still-face paradigm is a research tool in which the mother suddenly assumes a blank and emotionless face in the midst of interacting with her infant. The infant generally reacts to this still-face from the mother with social withdrawal (Adamson & Frick, 2003). However, when the mother maintains physical contact with the infant, the expressionless face of the mother does not affect the infant. This finding suggests that even after removal of other factors of mother-infant interactions, touch can still facilitate the mother-infant connection (Stack & Muir, 1992). Another finding regarding touch and behavior in infants by Feldman, Eidelman, Sirota, and Weller (2002) showed that both infants' attention and emotion regulation skills were superior at three and six month following kangaroo care as a newborn.

Research has also been conducted on both child and adolescent behavior and touch. Weiss (2005) reported that two year olds receiving affective and comforting touch had fewer behavioral and emotional problems. Tiffany Field, the primary touch researcher in the area of touch research, has conducted the majority of the existing research in the area of child massage. Field et al. (1996) found that preschool children who received regular massage for five weeks had better behavior ratings in several domains than children who did not receive massage. Teachers also rated the behavior of the preschoolers who were massaged as being better than that of preschoolers who were not massaged. Research on the behaviors of autistic children who received touch therapy indicate that the children who received touch therapy showed less stereotypic behavior and more on-task behavior (Field, Lasko, Mundy, & Henteleff, 1997; Escalona, Field, Singer-Strunck, Cullen, & Harshorn, 2001). Additionally, autistic children improved in their ability to socially relate during play at school. Field, Quintino, Hernandez-Reif, and Koslovsky (1998) conducted research on the effect of massage therapy with adolescents diagnosed with attention-deficit-hyperactivity disorder. They found that adolescents receiving massage fidgeted less directly following massage. Adolescents also reported lower hyperactivity and spent more time on-task in the classroom after two weeks of regular massage. Similarly, anxiety and activity levels of adolescent psychiatric patients lessened after massage therapy (Field, Morrow, Valdeon, Larson, Kuhn, & Schanberg, 1992).

Child Behavior and Family Functioning

Child behavior problems have been associated with family functioning in the literature. Studies have been conducted which examine the direct effects of family support, cohesion, adaptability and routines on child adjustment and found that families higher in

these characteristics have children who are better adjusted (Moos, 1974; Olson, Portner, & Bell, 1982; Reid & Crisafulli, 1990; Wyman, Cowen, Work, & Parker, 1991). The aim of an exploratory study by Slee (1996) was to examine mothers' perceptions of family climate in two types of families. Mothers' with a conduct disordered child perceived the family climate differently than the mothers of children with no diagnosis. The mothers of conduct disordered children rated the family climate as more control oriented, more conflictual, less cohesive, less organized, less encouraging of the expression of feelings, and lacking in structure and clarity regarding family rules and responsibilities. As a part of the same study, raters who were unaware of which children were diagnosed with conduct disorder made behavioral observations of the families, and their ratings supported the finding that mothers of conduct disordered children were more control oriented than mothers of children with no diagnosis.

Levy, Kim, and Pears (2005) found that the interaction of family environment and temperament predicted child internalizing and externalizing behavior. Family environment has been shown to moderate the connection between internalizing and externalizing behaviors and child temperamental characteristics (Bates, Pettit, Dodge, & Ridge, 1998; Morris, Silk, Steinberg, Sessa, Avenevoli, & Essex, 2002; Stoolmiller, 2001). Harsh discipline has emerged as a major factor in accounting for the variation in externalizing behavior outcomes in children (Eddy & Chamerlain, 2000; Keiley, Lofthouse, Bates, Dodge, & Pettit 2003). Interventions which target marital adjustment, parenting and parent depression have been associated with a decrease in child externalizing and internalizing behaviors (Forgatch, DeGarmo, & Beldavs, 2005; Stoolmiller, Eddy, & Reid, 2000). Kliewer and Kung (1998) found that routines and higher levels of cohesion had the effect of

attenuating the relationship between internalizing and externalizing behavior and everyday hassles in inner city children, while high family conflict increased the risk of adjustment problems. The results of this study also show that family adaptability lessened the effect of daily hassles on children with more externalizing behavior. In summary, touch is important and connected to both family functioning and child behavior problems. Additionally family functioning has been linked with child behavior.

Touch Intervention

Taken together, all of this research suggests that there are many benefits to increasing nurturing touch. There is a has been a growing trend to minimize the amount of touching in society, due to concerns about child abuse and sexual harassment (Field, 2001). Media coverage about the effects and problems associated with unsafe touch has been widespread, particularly for children. Many programs have been developed to educate both children and adults about “good touch” and “bad touch” (Johnson, 2000b). It would seem that these programs have empowered children to say no to bad touch but have also contributed to adults’ fears of touching children in healthy ways. Misunderstandings and accusations of child mistreatment are a growing concern among parents. Through this study, families will be educated about the effects of healthy touch to promote an increase in healthy touch. This research will also contribute to the literature on the effects of increasing healthy touch on family functioning and child behavior. If positive outcomes are found in families after applying the techniques from the touch manual, the benefits of a simple intervention, like a touch manual, may be a very helpful tool for practitioners and other professionals who work with families.

The Current Study

The purpose of the current study was to test an intervention aimed at increasing nurturing touch in families with young children. The effectiveness of the intervention was also tested by examining family functioning and child behavior problems. The intervention was comprised of a manual on the topic of touch along with specific exercises involving touch for the family to do in the home. The research objectives and hypotheses for the current study are as follows:

Primary Research Objective: to evaluate the effects of the touch intervention on touch in the home, family functioning, and child behavior. Based on this primary research objective, it was expected that:

- Hypothesis 1: The families who use the touch manual will demonstrate better touch, family functioning, and child behavior outcomes than the families who do not use the touch manual.
- Hypothesis 2: Families who use the touch manual for a longer period of time will demonstrate better touch, family functioning, and child behavior outcomes than families who use the manual for a shorter period of time.

Secondary Research Objective: to investigate the psychometric properties of the Touch Survey.

Method

Participants

The participants in this study were families who had at least one adopted child between six and twelve years of age. Both single- and two- parent families were included in the sample. For this study, families consisted of at least one parent (or legal caregiver) and one child, and they were recruited from families who had contacted the lab because their child had behavioral issues and also through notices posted on various adoptive parenting websites. The sampling procedure was designed to allow for a large group of participants with variability in child behavior issues.

Measures

Demographic Information. Data for the current research was collected from the same families at three time points. One hundred families answered a set of demographic questions at the beginning of the study such as their living arrangement, education level, and religious affiliation. Of those 100, eighty participants submitted data at the second testing time point and 64 submitted data at the third time point, see Tables 1 - 4 for demographic information of participants at each data collection time point.

Table 1

Frequencies and Percentages for Demographic Information at Pretest, Two-Months, and Four-Months

	Pretest		2-Month		4-Month	
	n	%	n	%	n	%
Living Arrangement						
Living with Romantic Partner	83	83.0	65	65.0	51	51.0
Not Living with Romantic Partner	13	13.0	11	11.0	9	9.0
Other (Not Living with Rom. Partner)	4	4.0	4	4.0	4	4.0
Education Level						
High school diploma/GED or less	2	2.0	0	.0	0	.0
Some college or less	17	17.0	15	15.0	11	11.0
Bachelor's Degree	38	38.0	31	31.0	25	25.0
Graduate Degree	43	43.0	34	34.0	28	28.0
Education Level of Spouse/Romantic Partner						
High School/GED or Less	6	6.0	4	4.0	4	4.0
Some college or Less	8	8.0	6	6.0	5	5.0
Bachelor's Degree	37	37.0	30	30.0	25	25.0
Graduate Degree	32	32.0	25	25.0	17	17.0
Job Status						
Full-time	25	25.0	19	19.0	15	15.0
Part-time	17	17.0	12	12.0	9	9.0
Stay-at-Home Parent	41	41.0	34	34.0	27	27.0
Student	2	2.0	2	2.0	2	2.0
Other	15	15.0	13	13.0	11	11.0
Job Status of Spouse/Romantic Partner						
Full-time	80	80.0	63	63.0	49	49.0
Part-time	1	1.0	1	1.0	1	1.0
Other	2	2.0	1	1.0	1	1.0

Table 2

Frequencies and Percentages for Demographic Information at Pretest, Two-Months, and Four-Months

	Pretest		2-Month		4-Month	
	n	%	n	%	n	%
Ethnicity						
African-American	1	1.0	1	1.0	1	1.0
Asian	1	1.0	0	.0	0	.0
Caucasian	93	93.0	75	75.0	60	60.0
Hispanic	1	1.0	1	1.0	1	1.0
Other	4	4.0	3	3.0	2	2.0
Ethnicity of Spouse/Romantic Partner						
African-American	3	3.0	3	3.0	3	3.0
Asian	1	1.0	1	1.0	1	1.0
Caucasian	77	77.0	60	60.0	46	46.0
Hispanic	2	2.0	1	1.0	1	1.0
Religious Affiliation						
Agnostic	3	3.0	3	3.0	3	3.0
Christian - Catholic	16	16.0	10	10.0	7	7.0
Christian - Orthodox	3	3.0	2	2.0	2	2.0
Christian - Protestant	60	60.0	51	51.0	41	41.0
Jewish	3	3.0	2	2.0	2	2.0
None	3	3.0	1	1.0	1	1.0
Other	12	12.0	11	11.0	8	8.0
Religious Affiliation of Spouse/Romantic Partner						
Agnostic	3	3.0	3	3.0	2	2.0
Christian - Catholic	10	10.0	6	6.0	4	4.0
Christian - Orthodox	2	2.0	1	1.0	1	1.0
Christian - Protestant	51	51.0	44	44.0	36	36.0
Jewish	4	4.0	3	3.0	2	2.0
None	6	6.0	2	2.0	2	2.0
Other	7	7.0	6	6.0	4	4.0

Table 3

Frequencies and Percentages for Demographic Information at Pretest, Two-Months, and Four-Months

	Pretest		2-Month		4-Month	
	n	%	n	%	n	%
Annual Household Income						
Less than $20,000	2	2.0	2	2.0	2	2.0
$20,000 - $40,000	3	3.0	3	3.0	2	2.0
$40,000 - $60,000	18	18.0	16	16.0	12	12.0
$60,000 - $80,000	24	24.0	22	22.0	19	19.0
$80,000 - $100,000	20	20.0	16	16.0	14	14.0
$100,000 or More	33	33.0	21	21.0	15	15.0
Total Adopted Children						
One	62	62.0	52	52.0	42	42.0
Two	27	27.0	17	17.0	13	13.0
Three	11	11.0	11	11.0	9	9.0
Gender of Target Child						
Male	51	51.0	40	40.0	31	31.0
Female	41	41.0	36	36.0	31	31.0
Abuse/neglect of Target Child						
Yes	65	65.0	53	53.0	45	45.0
No	12	12.0	10	10.0	5	5.0
Not Sure	23	23.0	17	17.0	14	14.0
Adoption Location of Target Child						
USA	34	34.0	27	27.0	22	22.0
Africa	3	3.0	3	3.0	3	3.0
Asia (Middle East or Far East)	20	20.0	17	17.0	13	13.0
Latin America	6	6.0	5	5.0	4	4.0
Europe (including Russia)	37	37.0	28	28.0	22	22.0

Table 4

Descriptive Statistics for Demographic Information at Pretest, Two-Months, and Four-Months

	Pretest (N=100[a])		2-Months (N=80[b])		4-Months (N=64[c])		Overall	
	Mean	SD	Mean	SD	Mean	SD	Min	Max
Respondent Age	45.07	6.88	45.06	7.06	45.02	7.26	29	66
Total People in Household	4.52	1.59	4.51	1.61	4.50	1.57	2	10
Target Child: Age	8.25	1.93	8.28	2.01	8.15	1.96	6	12
Studious/Playful	4.34	.96	4.38	.93	4.41	.94	2	6
Strict/Lenient	3.31	1.15	3.26	1.17	3.20	1.12	1	6
Emotional/Unemotional	2.59	1.04	2.56	1.07	2.63	1.05	1	5
Cool/Warm	5.62	1.04	5.59	1.01	5.66	1.06	3	7
Connected/Separate	2.36	1.33	2.40	1.33	2.39	1.22	1	6
Dependent/Independent	4.13	1.30	4.15	1.32	4.20	1.21	1	7

Note: [a]Target Age N=84; [b]Target Age N=75; [c]Target Age N=62

Participants were also asked to identify an adopted child in the home, between the ages of six and twelve, with the most behavior problems to be the target child for this study. Information was also gathered on the gender, age, location of adoption, and whether the child had been abused or neglected prior to adoption (see Table 3 for descriptive information about

the target child). Finally, participants were asked to rate their family on six different semantic differential scales (Passmore, Dobbie, Parchman, & Tysinger, 2002). These scales consisted of two opposite adjectives (e.g. studious and strict) with spaces in between them for participants to mark where they would rate their family. See Table 4 for means and standard deviations for each scale.

Fidelity. Participants were asked three questions to check for fidelity to the intervention. These questions included asking the participants about the time and effort that they invested in learning about touch, touching others, and thinking about touch in the past two months. Each of these items was rated on a seven point scale, ranging from "decreased" to "increased." The sum of the three items was computed to derive each participant's fidelity score at both testing time points and a higher score indicates more fidelity to the intervention.

Touch Survey. The Touch Survey is a brief questionnaire, which was developed for the current study. The survey includes questions about quantity of touch, importance of touch, intentions about touch, and enjoyment of touch. Several types of touch are addressed in the survey including comforting touch, playful touch, instrumental touch, and controlling touch (see Appendix B). A sample question was "Do you enjoy touching your child(ren) in a comforting manner," which was measured on a seven-point scale ranging from "Not at all" to "A lot." Using a combination of pre-intervention touch survey data from the current study and a separate sample of families who completed the touch survey independently, a principle components factor analysis was run on the touch survey. The factor anlysis yielded six distinct factors which were labeled Child ($\alpha = .81$), Intent ($\alpha = .83$), Parent ($\alpha = .83$), Family ($\alpha = .81$), Instrumental Touch ($\alpha = .80$), and Parent/Child Connection ($\alpha = .70$). Tables 5 and

6 show the item numbers, factor loadings, and item descriptions for each of the six factors. A more thorough description of the factor analysis is included in the results section.

Table 5

Item number, Item Loadings, and Questions for Items Loading on the First Three Factors, Which were labeled "Child," "Intent," and "Parent" (N =113)

Factor	Item	Loading	Questions
			Child (14.72% of total variance)
1	1	.702	How much comforting touch occurs between you and your children?
1	5	.892	How important is comforting touch to your children?
1	12	.838	Do your children enjoy being touched in a comforting manner?
1	40	.589	What are your children's attitudes about touch (in general)?
			Intent (13.24% of total variance)
2	7	.827	In regard to your children, do you intend to have more, less or the same amount of comforting touch in the future (or the next two months)?
2	22	.911	In regard to your children, do you intend to have more, less or the same amount of playful touch in the future (or the next two months)?
2	37	.786	In regard to your children, do you intend to have more, less or the same amount of practical touch in the future (or the next two months)?
			Parent (12.56% of total variance)
3	4	.878	How important is comforting touch to you?
3	11	.833	Do you enjoy being touched in a comforting manner?
3	39	.853	What is your overall attitude about touch (in general)?

Table 6

Item number, Item Loadings, and Questions for Items Loading on the Factors Four, Five, and Six, Which Were Labeled "Family," "Instrumental Touch," and "Parent/Child Connections" (N =113)

Factor	Item	Loading	Questions
			Family (12.29% of total variance)
4	3	.798	How much comforting touch occurs among other members of your
4	18	.852	How much playful touch occurs among other members of your
4	29	.778	Do your children enjoy touching others in a playful manner?
			Instrumental Touch (11.63% of total variance)
5	31	.705	How much practical touch occurs between you and your children?
5	34	.849	How important is practical touch to you?
5	35	.878	How important is practical touch to you children?
			Parent/Child Connections (10.42% of total variance)
6	16	.696	How much playful touch occurs between you and your children?
6	24	.866	Do you enjoy touching your children in a playful manner?
6	27	.552	Do your children enjoy being touched in a playful manner?

Family Assessment Device (FAD). The FAD (Epstein, Baldwin, & Bishop, 1983) is a measure that was created to operationalize the McMaster Model of Family Functioning (MMFF). The McMaster model takes a general systems approach in developing a clinical conceptualization of family functioning. The McMaster model describes both the structural and organizational properties of the family and attributes dysfunction in family functioning to a dynamic relationship between family sub-systems and systems that are external to the family, instead of any single aspect of the family. It allows an examination of transactions among families members which distinguish between healthy and unhealthy families. The FAD consists of 60 items, which are completed by the parent. The questionnaire yields seven scores, each corresponding to one of the seven dimensions of the MMFF. These dimensions are Problem Solving, Communication, Family Roles, Affective Responsiveness, Affective Involvement, Behavioral Control, and General Functioning. The items consist of statements about the family, A sample question from the FAD is "In times of crisis, we can turn to each other for support," which is measured on a four point scale ranging from "strongly agree" to "strongly disagree." The FAD scores are computed such that higher scores for each subscale indicate more problems and lower scores indicate fewer problems in family functioning.

Child Behavior Checklist, Parent Form (CBCL). The CBCL (Achenbach, 1991a, 1991b) is a widely used checklist to assess behavior problems. It consists of 113 items that assess the child's degree of externalizing behaviors (e.g., hyperactivity, aggression) and internalizing behaviors (e.g., shyness, withdrawn). The CBCL yields scores for externalizing and internalizing problems, and eight subscales (Rule Breaking, Aggression, Withdrawn, Somatic, Anxious/Depressed, Social Problems, Thought Problems, and Attention Problems). Higher scores for each subscale indicate more child behavioral problems.

Procedure

Invitations for the current study were emailed with the feedback from a previously completed study in the lab. Notices were also posted on various parent support-group websites for adoptive and foster parents. Interested families contacted the researcher by phone or email. They were sent a short description of the study and a website where they could log on to complete the consent form and demographic survey (see Appendix A) if they decided to participate. As a part of the demographic survey, participants created a unique identification number, which was included on each survey they completed. The purpose of this was to connect responses from participants over time.

After participants finished the consent form and demographic survey, they were randomly assigned to either Group A or Group B. Group A was sent a touch manual and instructed to start using it immediately. Group B was the comparison group for the first phase of the study. The participants in Group B were instructed that they would be asked to fill out several measures after two months.

For Group A, two months after receipt of the manual, participants were asked to complete the Touch Survey, FAD, and CBCL online. The primary caregiver filled out the measures. If the family had more than one child between the ages of six and twelve years, the parents were asked to identify one adopted child from the family in this age range who they hope to benefit the most from the intervention (typically the child with the most behavior problems). For Group B, two months after completing the demographic survey, participants were asked to complete the three measures (Touch Survey, FAD, and CBCL).

All participants were instructed to use the manual during the second phase of the study. Participants in Group A continued to use the manual. Participants in Group B were

sent the touch manual after completing the measures and instructed to begin using it immediately. At the end of phase two (two months after participants complete the measures; four months after the beginning of the study) all participants were again asked to complete the same three measures (Touch Survey, FAD, and CBCL).

Upon completion of the second round of testing, participants were informed that they had completed the study and that they would be emailed their individual reports on the measures, which were sent to them once they were scored. The overall length of participation for all participant families was four months.

Results

Factor Analysis

A principal component analysis with orthogonal varimax rotation was conducted on the Touch Survey (n= 113). Of these 113 Touch Surveys, 45 came from participants in the current study who were in the delay treatment group and had not yet recieved the touch manual at the time they completed the Touch Survey. The remaining 68 touch surveys were completed in a separate study, which consisted of families with at least one child between four and 12 completing the touch survey and short demographic questionnaire one time.

Kaiser's eigenvalue criterion and the Scree test were used to determine the number of factors extracted. Items that failed to load on any factor (loading <.50) or those with unacceptably high secondary loadings (>.40) were removed from the data. The items that were not acceptable were removed in blocks of approximately five based on the factor loading examination, and the remaining items were analyzed again. A clean solution was obtained after repeated factor analyses. The analysis yielded six distinct factors and the items that loaded on each factor were used to label the factors as Child Touch, Touch Intentions,

Parent Touch, Family Touch, Instrumental Touch, and Parent/Child Connection. Cronbach's coefficient alpha was used to assess internal consistencies for each factor. The coefficients obtained were .81, .83, .83, .83, .80, .70, respectively. The four factors accounted for 14.72%, 13.24%, 12.56%, 12.29%, 11.63% and 10.42% of the total variance, respectively. Tables 5 and 6 show the item numbers, factor loadings and item descriptions for each factor.

The full sample was used to examine the intercorrelations of the final factors. The intercorrelations were examined by computing factor scores by taking the average of all items loading on each factor. Table 7 shows the sample means and standard deviations for the derived factors. Table 8 shows the intercorrelations between factors.

Table 7

Descriptive Statistics for Touch Survey Subscales for Factor Analysis Data

	N	Mean	SD	Min	Max
Child Touch	107	6.31	.87	1.50	7.00
Parent Touch	107	6.16	.99	2.33	7.00
Family Touch	107	5.26	1.26	1.33	7.00
Parent/Child Connection	103	6.22	.77	3.67	7.00
Touch Intentions	106	4.66	.86	3.33	7.00
Instrumental Touch	103	5.25	1.25	1.67	7.00
Total Touch	103	108.07	10.95	78	132

Table 8

Descriptive Statistics for Touch Survey Subscales for Factor Analysis Data

	Child Touch	Parent Touch	Family Touch	Parent/Child Connection	Touch Intentions	Instrum Touch
Parent Touch (n=107)	.254 **					
Family Touch (n=107)	.466 **	.172 +				
Parent/Child Connection (n=103)	.458 **	.333 **	.392 **			
Touch Intentions (n=106)	.018	-.038	-.169 +	-.068		
Instrum Touch (n=103)	.265 **	.142	.324 **	.317 **	.089	
Total Touch (n=103)	.722 **	.488 **	.666 **	.669 **	.207 *	.661 **

Touch Intervention Preliminary Analyses

Relationships Among Demographic Variables

Based on the demographic information of participants who completed all testing time points, the following three variables were excluded from further analysis. Job status of spouse/romantic partner was excluded because 96.1% of participants reported that their

spouse/romantic partner worked full-time. Ethnicity and spouse ethnicity were excluded because 93.8% of participants reported that they were Caucasian and 90.2% reported that their spouse/romantic partner was Caucasian.

The levels of several variables were collapsed for further analysis based on frequency information. For living arrangement, the data from those who were not living with romantic partner and from those who chose "other" were collapsed into one category called not living with romantic partner. For education level and education level of spouse/romantic partner, high school diploma/GED and some college or less to were collapsed into one category called some college or less. For job status, part-time, student, and other were collapsed into one category called part-time/student/other. For religious affiliation and religious affiliation of spouse, all levels except Christian-Protestant were collapsed into one category called other. For income, the levels of less than $20,000, $20,000-$39,999, and $40,000-$59,999 were collapsed into one category called less than $60,000. For abuse/neglect of target child, no and not sure were collapsed into one category. And finally for adoption location of target child, Africa, Asia, and Latin America were combined into one category called Africa/Asia/Latin America (see Tables 1-3 for the frequencies and percentages of all levels of these variables).

Analyses were conducted on the two-month data to examine the relationships between the independent variables. More specifically, crosstab analysis using Pearson's chi-square and Cramer's V tests were conducted to examine the relationships between the categorical independent variables. Independent sample t-tests and one-way analysis of variance were conducted to examine differences between categorical and continuous

independent variables. Finally, Pearson's product moment correlations were conducted to examine the relationships between continuous independent variables.

Several significant patterns of relationships were revealed based on these analyses. Although participants were randomly assigned to the intervention and delay groups, a few differences were found between groups. The delay intervention group (M = 2.36, SD = .93) had significantly lower scores on the emotional/unemotional variable than the intervention group (M = 2.90, SD = 1.11), t = 2.12, $p < .05$ indicating that the delay intervention group rated their families as being more emotional than then intervention group. A significant relationship was also found between intervention group and gender of the target child, $\chi^2(1) = 4.10$, $p < .05$. A greater proportion of those in the intervention group identified a female as the target child (60.6%), while a greater proportion of those in the delay intervention group identified a male as the target child (62.8%).

Two variables were excluded from further analyses due to a very strong relationship with other variables. A crosstab analysis using Pearson's chi-square and Cramer's V between religious affiliation and religious affiliation of spouse/romantic partner revealed a strong relationship, $\chi^2 = 49.23$, $p < .01$, Cramer's V = .86, $p < .01$. Religious affiliation of spouse/romantic partner was excluded from further analyses to account for the collinearity between these variables. A strong relationship was also found between total number of children and number of adopted children, $\chi^2 = 91.86$, $p < .01$, Cramer's V = .76, $p < .01$. Total number of children was excluded from further analyses to account for the collinearity between these variables.

Descriptives of Dependent Variables

The means and standard deviations for the Touch Survey subscales and overall touch score at two-months and four months are shown in Table 9. In general, the subscales with the highest means were Child Touch, Parent Touch, and Parent/Child Connections. The Touch Intentions and Family Touch had the lowest means. Pearson's correlation coefficients were conducted among the subscales of the Touch Survey at two- and four-months (see Tables 10 and 11). In general, the subscales were significantly correlated with each other in a positive direction. The exception is the Touch Intentions subscale, which was not significantly correlated with the other subscales at either two- or four-months.

Table 9

Descriptive Statistics for Touch Survey Subscales at Pretest, Two-Months, and Four-Months

	2-Month (N=80)		4-Month (N=63)		Overall	
	Mean	*SD*	*Mean*	*SD*	*Min*	*Max*
Child	6.01	.98	6.15	.92	2	7
Parent	6.00	1.06	6.14	1.00	2	7
Family	4.88	1.09	4.95	1.12	1	7
Parent/Child Connection	5.98	.88	6.22	.74	3	7
Intentions	4.86	.82	4.96	.91	4	7
Instrumental Touch	5.00	1.22	5.16	1.14	2	7
Total Touch	104.23	10.71	106.87	11.37	67	130

Table 10

Pearson's Correlation Coefficients for the Touch Survey Subscales at Two-Months (n=80)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch
Parent	.213 +					
Family	.388 **	.130				
Parent/Child Connection	.307 **	.174	.515 **			
Intentions	-.017	-.020	-.177	-.076		
Instrum Touch	.197 +	.165	.271 *	.284 *	-.037	
Total Touch	.686 **	.508 **	.664 **	.646 **	.132	.606 **

Table 11

Pearson's Correlation Coefficients for the Touch Survey Subscales at Four-Months (n=63)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch
Parent	.239 +					
Family	.501 **	.302 *				
Parent/Child Connection	.401 **	.152	.371 **			
Intentions	.074	.003	-.140	.191		
Instrum Touch	.396 **	.355 **	.300 *	.336 **	.186	
Total Touch	.749 **	.566 **	.665 **	.620 **	.316 *	.721 **

The means and standard deviations for the FAD subscales at two- and four-months are shown in Table 12. Pearson's correlation coefficients among the subscales of the FAD at two- and four-months revealed that all subscales were significantly correlated with each other in a positive direction (see Tables 13 and 14).

Table 12

Descriptive Statistics for Family Functioning Survey Subscales at Pretest, Two-Months, and Four-Months

	2-Month (N=78)		4-Month (N=63)		Overall	
	Mean	*SD*	*Mean*	*SD*	*Min*	*Max*
Roles	24.31	3.97	23.83	3.71	15	36
Affective Involvement	14.99	3.15	14.92	2.99	8	25
Behavioral Control	14.58	3.20	14.25	3.22	9	23
General Functioning	22.85	5.39	22.03	5.28	12	38
Problem Solving	11.71	2.68	11.41	2.63	6	19
Communication	17.59	3.90	17.38	3.79	9	27
Affective Responsiveness	11.65	2.92	11.30	2.70	6	21

Table 13

Pearson's Correlation Coefficients Between the Touch Survey and Family Functioning Subscales at Two-Months (n=78)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch	Total Touch
Roles	-.161	.112	-.267 *	-.175	.078	-.141	-.182
Affective Involvement	-.254 *	.045	-.238 *	-.226 *	-.029	-.256 *	-.303 **
Behavioral Control	-.352 **	-.031	-.375 **	-.299 **	-.113	-.122	-.396 **
General Functioning	-.339 **	-.022	-.350 **	-.416 **	.112	-.169	-.374 **
Problem Solving	-.260 *	-.140	-.370 **	-.339 **	.101	-.171	-.370 **
Communication	-.293 **	.027	-.382 **	-.429 **	.072	-.131	-.352 **
Affective Responsiveness	-.428 **	-.144	-.488 **	-.458 **	.246 *	-.114	-.446 **

Table 14

Pearson's Correlation Coefficients Between Touch Survey and Family Functioning Subscales at Four-Months (n=63)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch	Total Touch
Roles	-.279 *	-.049	-.169	-.130	.038	-.258 *	-.247 +
Affective Involvement	-.153	.020	-.035	-.004	-.084	-.094	-.104
Behavioral Control	-.496 **	-.100	-.234 +	-.239 +	-.083	-.191	-.379 **
General Functioning	-.499 **	-.099	-.335 **	-.257 *	.053	-.216 +	-.388 **
Problem Solving	-.404 **	-.180	-.202	-.191	-.074	-.198	-.352 **
Communication	-.408 **	-.087	-.355 **	-.200	-.028	-.277 *	-.388 **
Affective Responsiveness	-.474 **	-.279 *	-.494 **	-.312 *	.100	-.175	-.462 **

The means and standard deviations for the CBCL subscales at two- and four-months are shown in Table 15. Pearson's correlation coefficients among the subscales of the CBCL at two- and four-months revealed that all subscales were significantly correlated with each other in a positive direction (see Tables 16 and 17).

Table 15

Descriptive Statistics for Child Behavior Checklist Subscales and Composite Scores at Pretest, Two-Months, and Four-Months

	2-Month (N=71)		4-Month (N=57)		Overall	
	Mean	*SD*	*Mean*	*SD*	*Min*	*Max*
Rule Breaking	5.15	3.91	4.63	4.69	0	24
Aggressive	14.30	8.17	11.93	8.45	0	33
Withdrawn	3.31	2.94	2.84	3.31	0	13
Somatic Problems	2.61	2.92	2.21	2.86	0	13
Anxious/Depressed	7.46	5.47	6.18	5.21	0	23
Social Problems	6.73	4.71	6.39	4.89	0	21
Thought Problems	5.54	4.34	4.61	4.36	0	18
Attention Problems	9.25	4.75	8.61	5.09	0	20
Internal Composite	13.38	9.26	11.23	10.02	0	47
External Composite	19.45	11.11	16.56	12.49	1	57

Table 16

Pearson's Correlation Coefficients Between Touch Survey and CBCL Subscales at Two-Months (n=71)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch	Total Touch
Rule Breaking	-.228 +	.048	-.283 *	-.169	.303 **	-.156	-.179
Aggressive	-.203 +	-.054	-.140	-.188	.199 +	-.245 *	-.216 +
Withdrawn	-.295 *	.043	-.197	-.225 +	.000	-.102	-.245 *
Somatic Problems	-.219 +	.008	-.165	-.236 *	.026	-.249 *	-.264 *
Anxious/ Depressed	-.115	-.046	-.112	-.172	-.064	-.179	-.207 +
Social Problems	-.029	.122	-.055	-.043	.104	-.118	-.017
Thought Problems	-.145	.041	-.167	-.281 *	.194	-.173	-.174
Attention Problems	-.234 +	-.005	-.212 +	-.086	.028	-.056	-.186
Internal Problems	-.231 +	-.011	-.180	-.248 *	-.030	-.217 +	-.283 *
External Problems	-.229 +	-.023	-.202 +	-.198 +	.253 *	-.235 *	-.222 +

Table 17

Pearson's Correlation Coefficients Between Touch Survey and CBCL Subscales at Four-Months (n=56)

	Child	Parent	Family	Parent/Child Connection	Intentions	Instrum Touch	Total Touch
Rule Breaking	-.160	.113	-.069	-.045	.334 *	.055	.043
Aggressive	-.193	.072	.011	-.007	.230 +	-.040	.000
Withdrawn	-.336 *	.139	-.191	-.145	.108	-.076	-.152
Somatic Problems	-.281 *	.044	-.099	.033	.090	-.107	-.113
Anxious/ Depressed	-.252 +	.145	-.089	-.039	.106	-.072	-.074
Social Problems	-.042	.120	.006	.039	.095	.030	.056
Thought Problems	-.211	.128	.024	-.104	.134	-.094	-.045
Attention Problems	-.095	.109	.029	-.086	.160	.051	.041
Internal Problems	-.321 *	.133	-.138	-.059	.116	-.093	-.121
External Problems	-.191	.091	-.018	-.022	.281 *	-.006	.016

Pearson's correlation coefficients were also computed between the subscales of the Touch Survey and the other two dependent measures (FAD and CBCL) at two-months in order to examine the convergent and discriminate validity of the Touch Survey. Correlations between the Touch Survey and the FAD revealed that the Child Touch, Parent/Child Connection, and Total Touch subscales were significantly and negatively correlated with all of the FAD subscales, except the Roles subscale (see Table 13). This indicates that more positive child attitudes about touch, more parent/child connection, and more total touch were related to less dysfunction in affective involvement, behavioral control, general functioning, problem solving, communication and affective responsiveness. Family Touch was significantly and negatively correlated with all of the Family Touch subscales, indicating that more touch among family members was related to less dysfunction in family roles, affective involvement, behavioral control, general functioning, problem solving, communication and affective responsiveness. Instrumental Touch was also significantly and negatively correlated with Affective Involvement, indicating that more instrumental touch was related to less dysfunction in affective involvement. Instrumental Touch was not significantly correlated with any of the other FAD subscales. The Touch Intentions subscale was significantly and negatively correlated with Affective Responsiveness, indicating that higher ratings of intentions to increase touch was related to less dysfunction in affective responsiveness. The Touch Intentions subscale was not significantly related to any of the other FAD subscales. Parent Touch was not significantly correlated with any of the FAD subscales.

Correlations between the Touch Survey and the CBCL revealed that all of the Touch Survey subscales except Parent Touch were significantly related to the Externalizing Composite and most to at least one of the two subscales that make up the Externalizing Composite (Rule Breaking and Aggression). Child Touch, Parent/Child Connection, Instrumental Touch, and Total Touch were significantly correlated with the Internalizing Composite and with at least one of the three subscales that make up the Internalizing Composite (Withdrawn, Somatic Problems, and Anxious/Depressed). The Parent Touch subscale of the Touch Survey was not significantly correlated with any of the CBCL subscales or composite scores. The Social Problems subscale of the CBCL was not significantly correlated with any of the Touch Survey subscales (see Table 16).

Relationships Between Demographic and Dependent Variables

Analyses were conducted to check for significant differences between the demographic variables and the subscale scores for the Touch Survey, FAD, and CBCL at both two- and four-months. For the Touch Survey two-month scores, there were several differences between the subscales and each of the demographic variables of group, religious affiliation, emotional/unemotional, cool/warm, and connected/separate. For the four-month scores, there were several differences between the subscales and each of the demographic variables of living arrangement, religious affiliation, studious/strict, emotional/unemotional, and cool/warm.

For the FAD two-month scores, there were several differences between the subscales and each of the demographic variables of religious affiliation, emotional/unemotional, cool/warm, and connected/separate. For the four-month scores, there were several differences

between the subscales and each of the demographic variables of parent age, strict/lenient, emotional/ unemotional, cool/warm, and connected/separate.

For the CBCL two-month scores, there were several differences between the subscales and each of the demographic variables of target child abuse/neglect, place of adoption of target child, age of target child, and cool/warm. For the four-month scores, there were several differences between the subscales and each of the demographic variables of target child abuse/neglect, place of adoption of target child, age of target child, and cool/warm, and connected/separate.

Based on these relationships, many of these variables were examined in later multiple regression analyses to account for their effects on the dependent variables.

Fidelity

The fidelity score was calculated for all participants at both testing time points to measure the time and effort dedicated to learning about touch, touching others, and thinking about touch in the previous two months. The minimum possible score was three and the maximum was 21. At the two-month time point, the mean score for all participants was 15.33 (SD = 3.28) with a minimum of 11 and a maximum of 21. At four-months the mean score was 16.65 (SD = 3.62) with a minimum of five and a maximum of 21.

Independent samples t-tests were conducted to check for differences between the Intervention and Delay Intervention Group at two-months and four-months (see Table 18). Results revealed that at two-months the Intervention group (who had the intervention for two-months) had significantly higher fidelity scores than the delay intervention group (who had not yet started the intervention). At four-months there was no significant difference between groups. One-sample t-tests were also conducted to check for significant change in

fidelity scores for the Intervention and Delay Intervention groups separately. A significant increase in fidelity score (M = 3.69, SD = 3.98) was found from pre- to post intervention in the Delay Intervention group, $t(31) = 5.24$, $p < .01$. A marginally significant decrease in fidelity score (M = -1.16, SD = 3.30) was found from two-months to four-months of intervention in the Intervention group, $t(30) = -1.96$, $p = .059$.

Table 18

Means and Standard Deviations for Fidelity Score at Two-Months and Four Months by Group

	N	*Mean*	*SD*	*t*	*p*
2-Month Fidelity				7.471	.000
Intervention Group	35	17.71	2.74		
Delay Intervention Group	45	13.47	2.34		
4-Month Fidelity				-.706	.483
Intervention Group	31	16.32	3.21		
Delay Intervention Group	32	16.97	4.00		

Primary Analyses: Hypothesis One

The primary research objective was to evaluate the effects of the touch intervention on touch in the home, family functioning, and child behavior. Based on the primary research objective, it was expected that the families who use the touch manual would demonstrate better outcomes than the families who did not use the touch manual. Several methods were used to test this hypothesis. First, a series of Multivariate Analyses of Variance (MANOVAs) were conducted to test for the effects of group (intervention vs. delay intervention) at two-months in order to compare scores of families who had the intervention to those who had not yet started the intervention. Next, multiple linear regression analyses were conducted to examine the effect of group and fidelity, while holding other related demographic variables constant. One-sample t-tests were conducted to examine the pre- and post intervention scores of the delay intervention group, and finally multiple linear regressions were conducted on the delay treatment group to examine factors that may be predictive of pre to post intervention change scores.

For the MANOVA analyses, the subscales were arranged into conceptually related groups within each measure. The subscales for the Touch Survey were analyzed in two groups including the subscales pertaining to people (Child Touch, Parent Touch, Family Touch, and Parent/Child Connection) and subscales pertaining to types of touch (Touch Intentions and Instrumental Touch). The sum score called Total Touch was analyzed separately. For the FAD, separate analysis were conducted for the Collaboration subscales (General Functioning, Problem Solving, Communication, Affective Responsiveness), and the Commitment subscales (Family Roles, Affective Involvement, Behavioral Control). For the CBCL, separate analyses were conducted for the Externalizing subscales (Delinquent

Behavior and Aggressive Behavior), the Internalizing subscales (Withdrawn, Somatic Complaints, and Anxious/Depressed), and the Composite scores (Internalizing Composite and Externalizing Composite) and the three remaining subscales (Social Problems, Thought Problems, Attention Problems).

There were no significant multivariate effects for differences between the intervention and delay intervention group at two-months for any of the dependent measures (all n.s.). Further examination of the univariate effects revealed one marginally significant difference between the intervention group ($M = 5.76$, $SD = .99$) and the delay intervention group ($M = 6.15$, $SD = .75$) on the Parent/Child Connection subscale of the Touch Survey, $F(1, 78) = 3.95$, $p = .05$. Contrary to the hypothesis, the delay intervention group reported marginally more touch between the parent and child than the intervention group.

Predictors of Two-Month Scores

Due to the amount and strength of the relationships between the demographic variables (including the family characteristic ratings) and the dependent measures, a series of multiple linear regressions were run to predict each of the dependent measure subscales at two-months, while controlling for other significantly related demographic variables. For each of the three measures, the pattern of relationships between the subscales of the dependent measure and the demographic variables was examined. The four demographic variables that were significantly related to the greatest number of subscales for each measure were chosen for inclusion in the multiple regressions. Also included in each of the regressions was a dummy variable for intervention group and the fidelity score. Intervention group was included so that the effect of group could be examined, while holding the other variables constant. The fidelity score was included to control for how much time and effort were

actually spent doing the intervention. The number of predictors for all regression analyses was limited to six due to sample size.

Touch Survey. The variables chosen for inclusion in the regressions on the Touch Survey subscales were Intervention, Fidelity, Protestant, Studious/Playful, Cool/Warm, and Connected/Separate. The individual model statistics for the Touch Survey subscale regressions at the two-month time point are shown in Table 19. Controlling for all other predictors at two-months, the Intervention variable was a significant predictor of the Connection subscale (Beta = -.29). This indicates that contrary to the hypothesis, being in the intervention group predicted decreased scores on the Parent/Child Connection subscale compared to being in the delay intervention group. The Studious/Playful variable was a significant predictor of the Parent/Child Connection subscale (Beta = .32), indicating that higher playfulness ratings predicted increased scores on the Parent/Child Connection subscale compared to families who had higher studious ratings. Being Protestant was a significant predictor of the Child (Beta = .27) and Parent/Child Connection Subscales (Beta = .27) and was also a significant predictors of Total Touch (Beta = .26). This indicates that being Protestant predicted increased scores for child touch, parent/child connection, and total touch compared to participants who had an other religion. The Cool/Warm variable was a significant predictor of the Child Touch (Beta = .39) and Parent/Child Connection subscales (Beta = .31), Total Touch (Beta = .40), and a marginally significant predictor of the Family Touch subscale (Beta = .25). This indicates that higher ratings of family warmth predicted increased scores for child touch, family touch, parent/child connections, and total touch compared to participants who rated the family as more cool. Fidelity and Connected/Separate were not significant predictors of any of the Touch Survey subscales or of Total Touch.

Table 19

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict 2-Month Touch Survey Subscales, with Reported Beta Weights

	Child	Parent	Family	Connection	Intent	Instrum	Total
Intervention	-.088	.174	.002	-.294 *	.023	-.039	-.060
Fidelity	.009	-.171	-.124	.012	.035	-.164	-.130
Protestant	.271 *	-.052	.153	.266 **	.141	.098	.262 *
Studious/Playful	-.044	-.026	.032	.318 **	.080	.030	.093
Cool/Warm	.390 **	.191	.246 +	.312 **	-.131	.220	.396 **
Connected/Separate	-.094	-.013	-.139	-.066	-.091	.110	-.080
F(6, 73)	4.457 **	.850	2.031 +	7.437 **	.479	1.053	5.068 **
Adjusted R^2	.208	-.011	.073	.328	-.041	.004	.236

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Family Assessment Device. Variables chosen for inclusion in the regression analyses on the FAD subscales were Intervention, Fidelity, Protestant, Age, Cool/Warm, and Connected/Separate. Individual model statistics for the FAD subscale regressions at the two-month time point are shown in Table 20. Controlling for all other predictors at two-months, the Intervention variable was a significant predictor of the Behavioral Control subscale (Beta = .28), and a marginally significant predictor of the General Functioning subscale (Beta = .21). This indicates that, contrary to the hypothesis, being in the intervention group predicted increased family dysfunction scores for behavioral control and general functioning compared to being in the delay intervention group. Fidelity was a marginally significant predictor of the Affective Responsiveness (Beta = .23) and Behavioral Control subscales (Beta = -.27), indicating that higher fidelity scores predicted increased dysfunction scores for affective responsiveness compared to those who have lower fidelity scores. Higher fidelity scores also predicted less dysfunction in behavioral control compared to those who have lower fidelity scores. Being Protestant was a significant predictor of the Roles (Beta = -.28), Behavioral Control (Beta = -.31), General Functioning (Beta = -.24), Communication (Beta = -.27), and Affective Responsiveness subscales (Beta = -.31), and a marginally significant predictor of the Problem Solving subscale (Beta = -.19). This indicates that being Protestant predicted better scores for roles, behavioral control, general functioning, problem solving, communication, and affective responsiveness compared to participants who had an other religion.

Table 20

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict Family Functioning 2-Month Scores, with Reported Beta Weights

	Roles	Affective Involvement	Behavioral Control	General Functioning	Problem Solving	Commun-ication	Affective Response
Intervention	.069	.062	.281 *	.214 +	.184	.221	.019
Fidelity	-.075	.038	-.268 +	-.072	-.081	-.070	.229 +
Protestant	-.280 *	-.172	-.313 **	-.239 *	-.192 +	-.266 *	-.313 **
Age	.071	.080	.118	.055	-.002	.062	-.050
Cool/Warm	-.004	-.266 *	-.076	-.351 **	-.363 **	-.342 **	-.427 **
Connected/Separate	.160	.176	.271 *	.344 **	.250 *	.196	.242 *
F(6, 71)	1.617	2.785 *	4.982 **	9.403 **	5.795 **	5.553 **	9.690 **
Adjusted R^2	.046	.122	.237	.396	.272	.262	.404

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

The Cool/Warm variable was a significant predictor of the Affective Involvement (Beta = -.27), General Functioning (Beta = -.35), Problem Solving (Beta = -.36), Communication (Beta = -.34), and Affective Responsiveness subscales (Beta = -.43). This indicates that higher ratings of family warmth predicted better scores for affective involvement, general functioning, problem solving, communication, and affective responsiveness compared to participants who rated the family as more cool. The Connected/Separate variable was a significant predictor of the Behavioral Control (Beta = .27), General Functioning (Beta = .34) Problem Solving (Beta = .25), and Affective Responsiveness subscales (Beta = .24). This indicates that higher ratings of family separateness predicted more family dysfunction for affective involvement, behavioral control, general functioning, problem solving, communication, and affective responsiveness compared to participants who rated the family as more connected. Parent age was not a significant predictors of any of the FAD subscale scores.

Child Behavior Checklist. Variables chosen for inclusion in the regressions on the CBCL subscales were Intervention, Fidelity, Abuse/Neglect of Target Child, Age of Target Child, Cool/Warm, and Connected/Separate. Individual model statistics for the CBCL subscale and composite score regressions at the two-month time point are shown in Table 21. Controlling for all other predictors at two-months, the Abuse/Neglect of Target Child variable was a significant predictor of the Aggression (Beta = .31), Anxious/Depressed (Beta = .25), and Social Problems subscales (Beta = .28), Internalizing (Beta = .25) and Externalizing Composite (Beta = .29), and a marginally significant predictor of the Somatic Problems subscale (Beta = .22). This indicates that known abuse/neglect of the target child predicted increased scores for aggression, somatic problems, anxious/depressed behaviors,

social problems, internalizing, and externalizing behaviors compared to no known abuse/neglect of the target child. Age of the Target Child was a marginally significant predictor of the Anxious/Depressed (Beta = .20) and Attention Problems subscales (Beta = .21), indicating that the target child being older predicted increased scores for anxious/depressed and attention problems compared to the target child being younger. The Cool/Warm variable was a marginally significant predictor of the Attention Problems subscale (Beta = -.24), indicating that higher ratings of family warmth predicted decreased attention problems compared to participants who rated the family as more cool. The Connected/Separate variable was a marginally significant predictor of the Aggression subscale (Beta = .23) and Externalizing composite (Beta = .23), indicating that higher ratings of family connection predicted decreased aggression and overall externalizing behavior compared participants who rated the family as more separate. Group and Fidelity were not significant predictors of any of the CBCL subscales or composite scores.

Change Scores

Effects of the touch intervention vs. no intervention were also measured by comparing the two-month and four-month data for each participant in the delay intervention group. At the two-month testing, the delay intervention group had not yet received the intervention, and at four-months they had been doing the intervention for two months. Change scores for the subscales of each measure were computed by subtracting each participant's two-month scores from the four-month scores. These change scores were then analyzed using one-sample t-tests to test for significant change from pre-intervention to post intervention. Table 22 shows the means, standard deviations, and significance level of the t-test on each subscale. It was found that Touch Intentions had a marginally significant

increase from pre- to post intervention. In addition, four of the CBCL subscales significantly decreased, indicating that the aggression, social problems, thought problems, and overall externalizing behaviors decreased from pre- to post intervention.

Predicting Change Scores

Regression analyses were also conducted to predict change scores from pre- to post intervention from the fidelity score and from several family descriptive variables.

Touch Survey. Individual model statistics for the regressions on the Touch Survey subscale change scores for the delay intervention group are shown in Table 23. Controlling for all other predictors, Fidelity was a significant predictor of the Parent/Child Connection subscale change (Beta = .61), and a marginally significant predictor of the Parent Touch subscale change (Beta = .40) and change in Total Touch (Beta = .45). This indicates that higher fidelity scores predicted more change in parent touch, parent/child connections, and total touch compared to those who had lower fidelity scores. The Emotional/Unemotional and Cool/Warm variables were not significant predictors of change scores.

Family Assessment Device. Individual model statistics for the regressions on the FAD subscale change scores for the delay intervention group are shown in Table 24. None of the Fidelity, Cool/Warm or Connected/Separate variables were significant predictors of any of the FAD subscale change scores.

Table 21

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict Child Behavior Checklist 2-Month Scores, with Reported Beta Weights

	Rule Br	Aggress.	Withdr	Somatic	Anx/Dep	Social	Thought	Attention	Internal	External
Intervention	-.077	-.106	-.021	-.021	-.174	.018	-.124	-.001	-.116	-.105
Fidelity	.217	.079	-.114	.162	.265	.083	.048	.035	.171	.135
AbuseNeglect	.183	.308*	.112	.219+	.245*	.275*	.192	.182	.249*	.291*
Target Child: Age	.087	-.007	.163	.082	.197+	.133	-.006	.207+	.194	.025
Cool/Warm	-.142	-.123	-.164	.003	.197	-.029	-.156	-.239+	.065	-.140
Connected/Separate	.163	.234+	-.058	.045	.217	-.014	-.009	-.026	.124	.230+
F(6, 64)	1.804	2.495*	1.107	1.017	2.490*	1.449	.947	2.015+	1.869	2.591*
Adj. R^2	.064	.114	.009	.001	.113	.037	-.005	.080	.069	.120

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Table 22

Means and Standard Deviations for the Delay Intervention Group Change Scores

	N	Mean	SD	t	p
Touch Survey					
Child Touch	32	.09	.68	.776	.443
Parent Touch	32	.11	.80	.813	.422
Family Touch	32	.18	1.06	.944	.352
Parent/Child Connection	32	.14	.57	1.336	.191
Touch Intentions	**32**	**.31**	**.90**	**1.956**	**.060**
Instrumental Touch	32	-.01	1.01	-.058	.954
Total Touch	32	2.56	9.27	1.564	.128
Family Assessment Device					
Roles	32	.22	3.09	.401	.691
Affective Involvement	32	.53	2.38	1.261	.217
Behavioral Control	32	-.22	3.27	-.378	.708
General Functioning	32	-.16	4.10	-.216	.831
Problem Solving	32	.00	2.31	.000	1.000
Communication	32	.09	3.20	.166	.869
Affective Response	32	.13	2.12	.333	.741
Child Behavior Checklist					
Rule Breaking	26	-.15	1.52	-.518	.609
Aggression	**26**	**-2.19**	**4.27**	**-2.617**	**.015**
Withdrawn	26	-.46	1.82	-1.296	.207
Somatic Problems	26	-.15	1.78	-.440	.664
Anxious/Depressed	26	-.85	2.72	-1.584	.126
Social Problems	**26**	**-.85**	**2.01**	**-2.142**	**.042**
Thought Problems	**26**	**-1.19**	**2.77**	**-2.194**	**.038**
Attention Problems	26	-.69	2.65	-1.332	.195
Internalizing Composite	26	-1.46	5.00	-1.491	.148
Externalizing Composite	**26**	**-2.35**	**5.25**	**-2.281**	**.031**

Table 23

Summary of Linear Regression Using Intervention Fidelity and Family Description Variables of Emotional/Unemotional and Cool/Warm to Predict Touch Survey Delay Intervention Group Change Scores, with Reported Beta Weights

	Child	Parent	Family	Connection	Intent	Instrum	Total
Fidelity	.273	.397 *	.178	.611 **	.014	.283	.448 *
Emotional/Unemotional	-.118	.134	-.075	-.064	.013	.135	-.005
Cool/Warm	-.227	.175	-.083	.001	-.067	-.078	-.142
F(3, 28)	1.503	1.968	-.058	5.654 **	.054	.313	2.914
Adjusted R^2	.046	.086	.431	.311	-.101	.023	.156

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Table 24

Summary of Linear Regression Using Intervention Fidelity and Family Description Variables of Cool/Warm and Connected/Independent to Predict to Predict FAD Delay Intervention Group Change Scores, with Reported Beta Weights

	Roles	Affective Involvement	Behavioral Control	General Functioning	Problem Solving	Commun-ication	Affective Response
Fidelity	.242	-.029	-.030	-.040	-.066	.136	.110
Cool/Warm	.097	.199	.095	.228	.138	.304	.112
Connected/Separate	.290	.112	-.002	.147	.196	.252	.166
F(3, 28)	1.027	.958	.102	.782	.812	.623	.217
Adjusted R2	.003	-.095	-.095	-.066	-.071	-.038	-.082

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Child Behavior Checklist. Individual model statistics for the CBCL subscale and composite change scores for the delay intervention group are shown in Table 25. Controlling for all other predictors, Abuse or Neglect of the Target child was a significant predictor of the Anxious/Depressed (Beta = .52) and Thought Problems Subscale change scores (Beta = .45) as well as the Internalizing composite change (Beta = .41). This indicates that known abuse/neglect of the target child predicted more change in anxious/depressed behaviors thought problems, and overall internalizing behaviors compared to no known abuse/neglect of the target child. Fidelity and Age of the Target Child were not significant predictors of any of the CBCL subscales or composite scores.

Hypothesis Two

It was also expected that families who used the touch manual for a longer time period would demonstrate better outcomes than families who use the manual for a shorter period of time. In order to test this hypothesis, a similar set of analyses were conducted on the data collected at the four-month testing as were conducted on the two-month data. A series of one-way MANOVAs were conducted to test for the effects of group (intervention vs. delay intervention) at four-months in order to compare scores of families who had used the intervention for two-months compared to those who had used the intervention for four-months.

Table 25

Summary of Linear Regression Using Intervention Fidelity and Target Child Abuse/Neglect and Target Child Age to Predict to Predict CBCL Delay Intervention Group Change Scores, with Reported Beta Weights

	Rule Br	Aggress.	Withdr	Somatic	Anx/Dep	Social	Thought	Attention	Internal	External
Fidelity	-.037	-.056	.093	.093	.102	.075	-.152	-.091	.187	-.057
Abuse/Neglect	.136	.311	.187	.187	.522*	.272	.447*	-.098	.407*	.295
Target Age	.316	.186	.253	.253	.181	.163	.291	-.115	.193	.245
F(3, 21)	.923	1.011	.726	.794	3.015+	.754	2.907+	.192	2.002	1.155
Adj. R^2	-.010	.001	-.036	-.026	.201	-.032	.193	-.112	.111	.019

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

An examination of the multivariate effects for the four-months revealed one significant result. The overall MANOVA was significant for the Touch Types, F (2, 60) = 3.33, $p < .05$. An examination of the univariate revealed a significant difference on the Touch Intentions subscale [F(1,61) = 5.29, p < .05], such that the Intervention Group had a significantly lower scores (M = 4.70, SD = .74) than did the Delay Intervention Group (M = 5.21, SD = .99).

Predictors of Four-Month Scores

Due to the amount and strength of the relationships between the demographic variables (including the family characteristic ratings) and the dependent measures, a series of multiple linear regressions were run to predict each of the dependent measure subscales at four-months, while controlling for other significantly related demographic variables.

Touch Survey. Individual model statistics for the Touch Survey subscale regressions at the four-month time point are shown in Table 26. Controlling for all other predictors at four-months, the Intervention variable was a significant predictor of the Touch Intentions subscale (Beta = -.25). This indicates that being in the intervention group predicted decreased scores for intentions to touch more in the future compared to being in the delay intervention group. In contrast to the two-month time point, the fidelity score was a significant predictor of the Child Touch (Beta = .32), Parent Touch (Beta = .41), and Touch Intentions (Beta = .39) subscales, the Total Touch score (Beta = .44), and a marginally significant predictor of the Parent/Child Connection subscale (Beta = .19). This indicates that higher fidelity scores predicted increased scores for child touch, parent touch, parent/child connections, touch intentions, and total touch compared to those who have lower fidelity scores.

Table 26

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict 4-Month Touch Survey Subscales, with Reported Beta Weights

	Child	Parent	Family	Connection	Intent	Instrum	Total
Intervention	.129	.175	-.004	-.059	-.250 *	.097	.044
Fidelity	.318 **	.414 **	.147	.190 +	.388 **	.198	.444 **
Protestant	.286 *	-.149	.226 +	.240 *	.081	.183	.241 *
Studious/Playful	-.015	.025	.189	.419 **	.050	.208	.214 *
Cool/Warm	.349 *	.235	.132	.261 +	.010	.117	.302 *
Connected/Separate	-.057	.091	-.069	-.005	-.010	-.031	-.028
F(6, 56)	5.872 **	2.770 *	1.824	5.976 **	3.024 *	1.772	7.638 **
Adjusted R2	.320	.146	.074	.325	.164	.069	.391

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Being Protestant was a significant predictor of the Child Touch (Beta = .29) and Parent/Child Connection subscales (Beta = .24), Total Touch (Beta = .24), and a marginally significant predictor of the Family Touch subscale (Beta = .23). This indicates that being Protestant predicted increased scores for child touch, family touch, parent/child connection, and total touch compared to participants who had an other religion. The Studious/Playful variable was a significant predictor of the Parent/Child Connection subscale (Beta = .32) and Total Touch (Beta = .21), indicating that higher playfulness ratings predicted increased scores on the Connection subscale and total touch compared to families who had higher studious ratings. The Cool/Warm variable was a significant predictor of the Child subscale (Beta = .35), Total Touch (Beta = .30), and a marginally significant predictor of the Parent/Child Connection subscale (Beta = .26). This indicates that higher ratings of family warmth predicted increased scores for child touch, parent/child connections, and total touch compared to participants who rated the family as more cool. Connected/Separate was not a significant predictors of any of the Touch Survey subscales or of Total Touch.

Family Assessment Device. Individual model statistics for the FAD subscale regressions at the four-month time point are shown in Table 27. Controlling for all other predictors at four-months, the Intervention variable was a marginally significant predictor of the Roles (Beta = -.24) and Behavioral change subscales (Beta = -.21). This indicates that being in the intervention group predicted better scores for roles and behavioral change compared to being in the delay intervention group. Fidelity was a significant predictor of the Behavioral Change subscales (Beta = -.25), indicating that higher fidelity scores predicted better behavior change scores compared to those who have lower fidelity scores.

Table 27

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict Family Functioning 4-Month Scores, with Reported Beta Weights

	Roles	Affective Involvement	Behavioral Control	General Functioning	Problem Solving	Commun-ication	Affective Response
Intervention	-.240 +	-.077	-.214 +	-.085	-.110	-.072	-.024
Fidelity	-.029	-.019	-.250 *	.033	-.102	-.038	.119
Protestant	-.173	.097	-.111	-.142	-.116	-.004	-.144
Age	.198	.008	.174	.158	.236 *	.277 *	.098
Cool/Warm	.025	-.230	.051	-.146	-.243 +	-.132	-.322 *
Connected/Separate	.221	.207	.352 *	.489 **	.358 **	.435 **	.362 **
F(6, 56)	2.068 +	1.926 +	3.716 **	6.008 **	6.549 **	5.265 **	6.164 **
Adjusted R2	.094	.082	.208	.326	.349	.292	.333

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Age was a significant predictor of the Problem Solving (Beta = -.24) and Communication (Beta = -.27) subscales, indicating that being older predicted higher dysfunction scores for problem solving and communication compared to participants who were younger. The Cool/Warm variable was a significant predictor of the Affective Responsiveness subscale (Beta = -.32), and a marginally significant predictor of the Problem Solving subscale (Beta = -.24). This indicates that higher ratings of family warmth predicted better scores for affective responsiveness and problem solving compared to participants who rated the family as more cool. The Connected/Separate variable was a significant predictor of the Behavioral Change (Beta = .35), General Functioning (Beta = .49) Problem Solving (Beta = .36), Communication (Beta = .43) and Affective Responsiveness subscales (Beta = .36). This indicates that higher ratings of family separateness predicted more family dysfunction for behavioral change, general functioning, problem solving, communication, and affective responsiveness compared to participants who rated the family as more connected. Being Protestant was not a significant predictor of any of the FAD subscale scores.

Child Behavior Checklist. Individual model statistics for the CBCL subscale and composite score regressions at the four-month time point are shown in Table 28. Controlling for all other predictors at four-months, the Fidelity score was a marginally significant predictor of the Rule Breaking (Beta = .22), Social Problems (Beta = .23), Thought Problems (Beta = .21), and Attention Problems subscales (Beta = .24), indicating that higher fidelity scores predicted more rule breaking, social problems, thought problems, and attention problems compared to those who have lower fidelity scores. Abuse/Neglect of Target Child variable was a significant predictor of the Thought Problems subscale (Beta = .30), and a marginally significant predictor of the Aggression subscale (Beta = .24) and the

Externalizing composite (Beta = .24). This indicates that known abuse/neglect of the target child predicted increased scores for aggression, thought problems, and externalizing behaviors compared to families with no known abuse/neglect of the target child. Age of the Target Child was a significant predictor of the Withdrawn (Beta = .35), Anxious/Depressed (Beta = .39) and Attention Problems subscales (Beta = .26), and the Internalizing composite (Beta = .35), indicating that the target child being older predicted increased scores for withdrawn behavior, anxious/depressed behaviors, attention problems, and overall internalizing behaviors compared to the target child being younger. The Cool/Warm variable was a marginally significant predictor of the Thought Problems subscale (Beta = -.30), indicating that higher ratings of family warmth predicted decreased thought problems compared to participants who rated the family as more cool. The Connected/Separate variable was a marginally significant predictor of the Aggression subscale (Beta = .23) and Externalizing composite (Beta = .23), indicating that higher ratings of family connection predicted decreased aggression and overall externalizing behavior compared participants who rated the family as more separate. Intervention group and Connected/Separate were not significant predictors of any of the CBCL subscales or composite scores.

Change Scores

Effects of the two-month vs. four-month intervention were also measured by comparing the two-month and four-month data for each participant in the intervention group. At the two-month testing, the intervention group had been doing the intervention for two-month, and at the four-month testing they had been doing the intervention for four-months. Change scores were computed between the two- and four-month subscale scores for each participant in the intervention group. These change scores were then analyzed using a one-

sample t-test to test for significant change from two- to four-months. Table 29 shows the means, standard deviations, and significance level of the t-test on each subscale. It was found that there was a significant increase in two of the Touch Survey subscales and in the total touch score. There was also a marginally significant increase in instrumental touch from two to four-months. For the FAD, four of the subscales scores significantly decreased from two- to four-months and two subscales showed a marginally significant decrease. The only FAD subscale that did not change was Affective Involvement. In contrast, none of the CBCL subscales showed change from two- to four-months.

Predicting Change Scores

Regression analyses were also conducted to predict change scores from two- to four-months from the fidelity score and from several family descriptive variables.

Touch Survey. Individual model statistics for the regressions on the Touch Survey subscale change scores for the intervention group are shown in Table 30. Controlling for all other predictors, fidelity was a marginally significant predictor of the Family Touch subscale (Beta = .35), and Total Touch (Beta = .32). This indicates that higher fidelity scores predicted more change for Family Touch and Total Touch compared to those who had lower fidelity scores. The Emotional/Unemotional variable was a marginally significant predictor of the Child Touch subscale change score (Beta = .47), indicating that higher ratings of the family as unemotional predicted more change in child touch compared to participants who rated the family as very emotional. The Cool/Warm variable was a marginally significant predictor of the Parent/Child Connection subscale change score (Beta = -.37), indicating that higher ratings of family warmth predicted more change in parent/child connections compared to participants who rated the family as more cool.

Table 28

Summary of Linear Regression Using Intervention Group, Religion, Target Child Gender, and Family Description Variables of Emotional/Unemotional, Cool/Warm, and Connected/Separate to Predict Child Behavior Checklist 4-Month Scores, with Reported Beta Weights

	Rule Br	Aggress.	Withdr	Somatic	Anx/Dep	Social	Thought	Attention	Internal	External
Intervention	.117	-.007	-.040	.135	.045	.141	.134	.127	.048	.039
Fidelity	.217^{+}	.149	.109	.070	.166	.227^{+}	.213^{+}	.235^{+}	.142	.182
AbuseNeglect	.197	.240^{+}	.078	.214	.116	.128	.302*	.206	.147	.236^{+}
Target Child: Age	.202	.126	.354*	.089	.393**	.213	.135	.261*	.345*	.161
Cool/Warm	-.172	-.176	-.206	-.055	-.083	-.278	-.295^{+}	-.167	-.127	-.184
Connected/Separate	.126	.237	.084	.096	.026	-.084	.103	.198	.069	.208
F(6, 64)	2.645*	3.036*	2.686*	.924	2.726*	2.215^{+}	4.259**	4.028**	2.567*	3.171*
Adj. R^2	.155	.184	.158	-.009	.161	.119	.266	.252	.148	.194

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Table 29

Means and Standard Deviations for the Intervention Group Change Scores

	N	Mean	*SD*	*t*	*p*
Touch Survey					
Child Touch	**31**	**.32**	**.66**	**2.713**	**.011**
Parent Touch	31	.22	.75	1.601	.120
Family Touch	31	.01	.78	.077	.939
Parent/Child Connection	**31**	**.37**	**.77**	**2.655**	**.013**
Touch Intentions	31	-.17	.71	-1.341	.190
Instrumental Touch	**31**	**.37**	**1.15**	**1.771**	**.087**
Total Touch	**31**	**3.65**	**9.61**	**2.112**	**.043**
Family Assessment Device					
Roles	**31**	**-1.10**	**2.88**	**-2.121**	**.042**
Affective Involvement	31	-.48	2.26	-1.190	.243
Behavioral Control	**31**	**-1.16**	**2.27**	**-2.852**	**.008**
General Functioning	**31**	**-1.71**	**2.30**	**-4.143**	**.000**
Problem Solving	**31**	**-.68**	**1.47**	**-2.567**	**.015**
Communication	**31**	**-.81**	**2.37**	**-1.893**	**.068**
Affective Response	**31**	**-.65**	**1.84**	**-1.957**	**.060**
Child Behavior Checklist					
Rule Breaking	26	.04	3.45	.057	.955
Aggression	26	-1.08	3.49	-1.575	.128
Withdrawn	26	-.04	2.07	-.095	.925
Somatic Problems	26	.00	2.30	.000	1.000
Anxious/Depressed	26	-.46	2.75	-.857	.400
Social Problems	26	.04	2.60	.075	.940
Thought Problems	26	.15	3.02	.260	.797
Attention Problems	26	-.15	2.91	-.270	.790
Internalizing Composite	26	-.50	5.87	-.434	.668
Externalizing Composite	26	-1.04	6.02	-.879	.388

Table 30

Summary of Linear Regression Using Intervention Fidelity and Family Description Variables of Emotional/Unemotional and Cool/Warm to Predict Touch Survey Intervention Group Change Scores, with Reported Beta Weights

	Child	Parent	Family	Connection	Intent	Instrum	Total
Fidelity	.000	.152	.354 +	.261	.209	.204	.318 +
Emotional/Unemotional	.469 *	-.002	.055	.231	.182	.221	.310
Cool/Warm	.124	-.262	-.214	-.371 *	.228	.075	-.021
F(3,27)	2.095	.661	1.429	3.348 *	1.201	.482	2.058
Adjusted R^2	.099	-.035	.041	.190	.020	-.016	.096

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Family Assessment Device. Individual model statistics for the regressions on the FAD subscale change scores for the intervention group are shown in Table 31. Controlling for all other predictors, the Cool/Warm variable was a marginally significant predictor of the Problem Solving subscale (Beta = -.41), indicating that higher ratings of family warmth predicted more change for problem solving compared to participants who rated the family as more cool. The Connected/Separate variable was a marginally significant predictor of the Roles subscale change scores (Beta = -.41), indicating that higher ratings of family connectedness predicted more change in family roles compared to participants who rated the family as more separate.

Child Behavior Checklist. Individual model statistics for the CBCL subscale and composite change scores for the intervention group are shown in Table 32. Controlling for all other predictors, fidelity was a marginally significant predictor of the Attention Problems subscale change scores (Beta = .44), indicating that having more fidelity to the intervention predicted the more change in attention problems as compared to those who reported less fidelity. The Abuse/Neglect of Target Child variable was a significant predictor of the Thought Problems subscales (Beta = .49). This indicates that known abuse/neglect of the target child predicted more change in thought problems compared to no known abuse/neglect of the target child. Age of the Target Child was not a significant predictors of any of the CBCL subscales or composite change scores.

Table 31

Summary of Linear Regression Using Intervention Fidelity and Family Description Variables of Cool/Warm and Connected/Independent to Predict to Predict FAD Intervention Group Change Scores, with Reported Beta Weights

	Roles	Affective Involvement	Behavioral Control	General Functioning	Problem Solving	Commun-ication	Affective Response
Fidelity	.008	.068	.279	.315	.271	-.102	.012
Cool/Warm	-.326	-.217	-.280	-.194	-.407 +	-.042	-.034
Connected/Separate	-.412 +	.009	-.264	-.245	-.348	-.001	-.137
F(3, 27)	1.085	1.139	1.139	.290	.214	.940	.134
Adjusted R2	.008	-.095	.014	.030	.056	-.095	-.095

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Table 32

Summary of Linear Regression Using Intervention Fidelity and Target Child Abuse/Neglect and Target Child Age to Predict to Predict CBCL Intervention Group Change Scores, with Reported Beta Weights

	Rule Br	Aggress.	Withdr	Somatic	Anx/Dep	Social	Thought	Attention	Internal	External
Fidelity	.121	.083	.237	.093	.111	.035	.209	.444^{+}	.107	.118
Abuse	.056	-.017	.026	.187	.071	.094	.495^{+}	.084	.036	.022
Target Age	.114	-.012	.107	.253	-.063	-.195	-.199	-.057	.054	.058
F(3, 22)	.440	.042	.811	.073	.109	.155	2.286	1.880	.200	.208
Adj. R^2	-.072	-.130	-.023	-.125	-.120	-.113	.134	.096	-.106	-.105

Note: + $p < .10$,* $p < .05$, ** $p < .01$.

Discussion

Psychometric Properties of the Touch Survey

The psychometric properties of the Touch Survey were examined. A factor analysis of the items revealed a six factor structure. Each factor appears to be conceptually unique from the other factors. The first factor was made up of questions about the child's attitudes about touch, the second was made up of questions about intentions to touch in the future, and the third was made up of question about the participants own attitudes about touch. The fourth factor was made up of questions about touch between other members of the family (not including the participant), the fifth was made up of questions about the amount and importance of instrumental touch, and the sixth was made up of questions about the amount and enjoyment of touch between the participant and his or her children.

Descriptive statistics for the Touch Survey subscales revealed that the mean scores for the Child Touch, Parent/Child Connection, and Parent Touch subscales were very high. The lowest possible mean was 1.00 and the highest was 7.00, and all of these subscales all had mean scores of over 6.00. Means for Family Touch and Instrumental Touch were also very high (>5.00). Touch Intentions had the lowest mean at 4.66 (SD = .86). Having subscale means that are this high is problematic because there is very little opportunity for improvement in the scores. Also of concern is the distribution of the means for each subscale. Child Touch, Parent Touch, and Touch Intentions subscale were skewed such that for Child Touch and Parent Touch, about one third of the sample had the highest possible mean. Research on survey development suggests that when developing a new measure, items with floor or ceiling effects should be modified so that the format of the responses or the number of response options is changed (Passmore, Dobbie, Parchman & Tysinger, 2002; Burns et al.,

2008). For the Touch Intentions subscale, almost one-half of participants choose that they intended to touch the same amount in the future, and all of the rest of the participants, except one, said that they planned to increase touch in the future.

Four out of the six subscales (Child Touch, Family Touch, Parent/Child Connection, and Instrumental Touch) were positively related with each other. However, the other two subscales of Parent-Touch and Touch Intentions were not significantly related to the other subscales or to each other. This suggests that the items rating the parent's own attitudes about touch and their intentions for future touch are measuring something different than the other four subscales.

Limitations and Future Research

The non-normal distribution of several of the Touch Survey subscales was a concern. Future research should consider rewording the anchor points or the actual survey items to make them more concrete, for example, the anchor point for items asking about amount of touch could say "0 to 1 times a day" instead of "very little."

A second limitation of the evaluation of the touch survey was the sample. Initially, the goal was to have a sample of at least 100 non-adoptive families with young children complete the touch survey. Due to limitations in the available sample, the factor analysis was run on data from a combination of adoptive and non-adoptive families. Future research should be conducted to gather normative data on both biological and adoptive families independently. In addition, the survey should be taken by participants at a minimum of two time points, with no intervention in between in order to establish test-retest reliability for the measure.

Finally, a third limitation is that the original Touch Survey included items about touch with the spouse/romantic partner. Including these items in the factor analysis, along with the other items about touch in the family, made the factors hard to interpret. Due to the current focus on touch between the parent and child, these items on the spouse/romantic partner were omitted from all analyses. Future research should examine these items separately and possibly create a second version of the Touch Survey to specifically examine touch between romantic couples.

Touch Intervention

Hypothesis One

The purpose of the current study was to test an intervention aimed at increasing nurturing touch in families with young children, and also to increase family functioning and decrease behavior problems. Two methods were used to test this hypothesis. First, the families who had used the intervention for two months were compared to families who had not yet started the intervention. Based on this analysis, the only difference between groups was a slightly lower scores for parent/child connection in the intervention group than the delay group, which was contrary to expectation. The second method was to compare individual participant data before and after two months of the intervention. Data from the delay intervention group was compared from two months (before they began the intervention) and four months (after two months of intervention). Based on this analysis, aggression, social problems, thought problems, and overall externalizing behaviors of the target child decreased after two months of intervention.

In order to further analyze the differences between the intervention and delay intervention groups, additional analyses were conducted. These analyses allowed for the

individual contribution of group, fidelity, and several demographic factors to be examined. Based on these analyses, parent/child connection was again shown to be lower in the intervention group than in the delay group, even when accounting for fidelity and other family demographic variables. Although one explanation for this difference is that the intervention decreased parent/child touch, a more likely explanation is that the families in the intervention group rated themselves more critically on these questions due to their increased familiarity with the importance of touch between them and their child(ren). Other variables that were found to influence the Touch Survey subscale scores were religion, and family ratings of studious/playful, and cool/warm. Families that were Protestant (versus all other religious affiliations), more playful, and more warm also had higher touch scores.

In regards to family functioning, participants in the intervention group rated both behavioral control and general family functioning as worse than did participants in the delay group, even when accounting for fidelity and other family characteristics. Some anecdotal reports from parents in the study indicate that some of the children were resistant to and/or questioned the increase in touch in the families. It is possible that increasing touch in the home created a paradigm shift, which created upheaval in the family functioning. Another possibility is again that participants might have rated their families more critically after attempting to implement the intervention for two-months. Interestingly, greater reported fidelity to the intervention was also related to more dysfunction in affective responsiveness but less dysfunction in behavioral control. This provides evidence that families who had a harder time implementing the intervention also reported more problems in behavioral control compared to those who had more fidelity to the intervention. Other variables that were found to affect the FAD subscale scores were religion, and family ratings of cool/warm, and

connected/separate. Families that were Protestant (versus all other religious affiliations), more warm, and more connected had better family functioning scores, regardless of group or fidelity to the intervention.

For the CBCL, participants in the intervention and delay groups did not rate child behavior problems differently, even when accounting for fidelity, target child characteristics, or family characteristics. In addition, fidelity to the intervention did not affect scores. In contrast, abuse or neglect of the target child was associated with child behavior problems, controlling for group assignment. Participants with children who had experienced neglect or abuse prior to adoption rated their children as having more internalizing and externalizing behaviors than those with no known abuse or neglect of the target child. This finding is similar to many other behavioral studies with children who have experienced neglect and/or abuse (e.g. ACF, 2004b; English, Widom, & Brandford, 2004; Juffer & van Ijzendoorn, 2005). Families with older target children reported more behavior problems than those with younger children, which also supports previous findings with adopted children (Rosenthal & Groze, 1990), Also, participants who rated the family as warmer and more connected also rated the behaviors of the target child as somewhat less problematic.

Further evaluation of hypothesis one included analyses to determine whether fidelity to the intervention or demographic variables were a important factor in the change scores from pre- to post intervention in the delay intervention group. For the Touch Survey, fidelity was related to parent/child connections, parent touch, and overall total touch meaning that participants who had more fidelity to the intervention had better touch scores. For the FAD, change scores were not predicted by fidelity or the demographic variables. Finally, for the

CBCL, abuse or neglect of the target child was an important factor in how much change was seen from pre- to post intervention.

Hypothesis Two

It was also expected that families who used the touch manual for a longer period of time would demonstrate better touch, family functioning, and child behavior outcomes than families who use the manual for a shorter time period. As for the first hypothesis, several methods were used to test this hypothesis.

Families who had used the intervention for four months were compared to those who used the intervention for two months. Based on this analysis, it was found that those who had been doing the intervention for less time had more intentions to increase touch than did those who had been doing the intervention longer. This may indicate that the families who had been doing the intervention for a longer time period felt that they had increased touch as much as they thought they could or as much as they thought was necessary compared to the delay group who had not been doing the intervention for the same length of time.

Next, individual participant data was compared at two and four months of intervention to see if individual scores changed after being in the intervention for a longer period of time. Based on this analysis, many of the touch and family functioning scores improved from two to four months of intervention. Child touch, parent/child connection, instrumental touch, and total touch all increased after participants had been in the study for a longer time period. Family functioning in the areas of including family roles, behavioral control, general functioning, problems solving, communication, and affective response showed improvement. Affective involvement was the only family functioning area that did

not show improvement. In contrast, none of the child behavior problems showed a difference from two to four months of intervention.

In order to further analyze the differences between the intervention and delay intervention groups, further analyses were conducted. These analyses allowed for the individual contribution of group, fidelity, and several demographic factors to be examined. Based on these analyses, intentions to increase touch were higher in the group that had been using the intervention for a shorter time period (two months) than in the group that had been doing the intervention for a longer period of time (four months), even when accounting for fidelity and other family demographic variables. In contrast to the comparison of families who had and did not have the intervention, fidelity to the intervention made a difference in participant scores on most of the Touch Survey Subscales. Controlling for group assignment, participants who reported more fidelity to the intervention had more child touch, parent touch, parent/child connections, touch intentions, and total touch compared to those who those who reported less fidelity to the intervention. Families who were Protestant, playful, and warm also had higher touch scores.

In regards to family functioning, participants who had been in the intervention for a longer period of time rated family roles and behavioral control better than the participants who had been in the intervention for a shorter time. At the first testing time point, participants in the intervention group (who had had the intervention for two months at that time point) rated behavioral control as worse than did the participants who had not yet started the intervention. This finding suggests that behavioral control may actually get worse after two months of intervention before getting better at four-months, which supports the idea that the touch intervention may destabilize the family before it has the intended effect. More

reported fidelity to the intervention was also related the behavioral control subscale such that participants who reported more fidelity reported better behavioral control. This finding reflects the findings at the first time point. Other variables that were found to influence the Family Functioning Device subscale scores were age, and family ratings of cool/warm, and connected/separate. Families that were younger, more warm, and more connected had better family functioning scores, accounting for group and fidelity to the intervention. The religion of the participant (Protestant vs. other religion), which was related to family functioning at the first time point, was no longer related to family functioning after both groups had been in the intervention.

For the CBCL, participants in the two-month and four-month intervention did not rate child behavior problems differently, even when accounting for fidelity, target child characteristics, or family characteristics. In contrast to the first testing time point, participants who reported more fidelity to the intervention reported more rule breaking, social problems, thought problems, and attention problems than those who reported less fidelity to the intervention. This finding is a bit hard to interpret but it may be that it was harder for participants who had a child with many behavior problems to effectively implement the intervention. Target child age as well as known abuse or neglect of the target child was associated with behavior problems such that participants with older children and children who had experienced neglect or abuse prior to adoption rated the child as having more behavior problems than those with no younger children and no known abuse or neglect of the target child. Families who rated the family as warmer and more connected also reported that the target child had less thought problems than families who were more cool.

Further evaluation of hypothesis two included analyses to determine whether fidelity to the intervention or demographic variables were important factors in the change scores from two months of intervention to four months of intervention. For the Touch Survey, participants who had more fidelity to the intervention had more change in family and overall touch. Also, families that were more unemotional showed more change in child touch, and families that were more warm had more change in parent/child connection. For the FAD, families that were more cool had more change in problem solving than families that were warmer, and families that were more connected had more change in family roles than families that were more cool. Finally, for the CBCL, families who had more fidelity to the intervention had more change in child attention. Abuse or neglect of the target child was an important factor in how much change was seen in child thought problems.

Relationships Among Touch, Family Functioning, and Child Behavior

Relationships among the Touch Survey subscales were examined, as well as the relationships between the Touch Survey subscales and the other two dependent measures of family functioning and child behavior. With the exception of the Touch Intentions subscale, all the touch survey subscales were positively related with each other. The fact that the Touch Intentions subscale is not related to any of the other Touch Survey subscales, or any of the subscales of the other measures and that the average of the subscale was much lower and distributed differently from the other Touch Survey subscales suggests that this subscale is measuring a different construct than the other subscales. It may be that the construction of the touch intentions items has to do with this difference. Anchor points for these items were set up so that the midpoint of the scale was no change in intentions to touch. None of the other item types had a true midpoint like this scale and it was found that many of the participants

choose the midpoint for these questions. A second explanation may be the complexity of the idea of intentions. Cohen and Levesque (1990) discuss the intricacies of intentions and the relationship to beliefs, goals, and actions, which may have had an effect on participant's responses to the questions about intentions in the current study.

Family functioning was related to child's attitudes about touch, touch among other members of the family, enjoyment of touch between parent and child, and total touch. Family functioning was not related to the participant's own attitudes about touch, touch intentions, or instrumental touch. The Child Touch subscale was related to the externalizing composite and to the subscales that made up externalizing. Child Touch was also related to the internalizing composite and two of the three that made up the internalizing scale. Child Touch was also related to attention problems. Internalizing and externalizing were related to Parent/Child Connection and to Instrumental Touch. Total touch was related to all but social problems, thought problems, and rule breaking. Externalizing composite was related to all the touch survey subscales.

Demographic Findings

Analyses were conducted to examine differences between the demographic variables and the three dependent measures at two-months and four-months. Within the demographic variables, there were items about characteristics of the parents (i.e. education level, religion, and income), items about characteristics of the target child (i.e. age, country adopted from, whether they had experienced abuse or neglect prior to the adoption), and a series of family ratings (i.e. is the family more connected or separate). It was found that many of these items were significantly related to the subscales of the three dependent measures. For the Touch Survey, many of the parent characteristics were related to the subscales at two and four months. Religion of the parent was significantly related the greatest number of subscales

including to Family Touch, Parent/Child Connection, and Total Touch. This finding is in agreement with previous research, which has found a positive association between religious beliefs and various aspects of family life and family satisfaction (Abbott, Berry, & Meredith, 1990). Mahoney & Tarakeshwar (2005) found that religion is related to more warmth in family relationships.

Whether the target child had experienced abuse or neglect was related to parent/child connection, Touch Intentions, and Instrumental Touch. The Emotional/Unemotional, Cool/Warm, and Connected/Separate variables were related to Child Touch, Family Touch, Parent/Child Connection, and Total Touch at both two and four months. However, the variables were more strongly associated at two-months than at four months. Overall, these findings suggest that the characteristics of the family were important in how they answered the touch survey.

For the FAD, the religion of the parents was related to most of the subscales at two months, but none of the subscales at four-months. Age of the parent was related to many of the subscales at four-months, but only to Behavioral Control at two-months. Characteristics of the target child (including gender, abuse/neglect, and where the child was adopted from) were related primarily to the Roles subscale. Family rating scales of Cool/Warm and Connected/Separate were related to all of the FAD subscales except Roles. Families that were "warmer" and more connected had better FAD subscale scores at both two and four months, which is consistent with family functioning literature (Mahoney & Tarakeshwar, 2005; Rodick, Henggeler, & Hanson, 1986)

For the CBCL, the characteristics of the target child were much more related to subscale scores than were characteristics of the parents. At both two and four months,

abuse/neglect and target child age were related to almost all of the CBCL subscales (older ages had more problems). The family rating scales of cool/warm and connected/separate were related primarily to the externalizing composite and to the two subscales that make up the externalizing score (Rule Breaking and Aggression). At four-months, Thought Problems and Attention Problems were related to cool/warm and connected/separate. Warm and connected families reported fewer thought and attention problems. Other studies have also found that child and family variables are related to child behavior problems (Mathijssen, Koot, & Verhulst, 1999).

Limitations and Future Research

The Touch Survey was a newly created measure, which was developed for use in the current study. Some limitations are associated with this measure and should be addressed before the measure is used again. One problem with the Touch Survey was that the means of the subscales were very high. Many participants had subscale averages of 7.0, which was the highest possible subscale average. For these participants, the scores could not increase over the course of the intervention because they were already topped out. The Touch Survey should be adjusted to have more concrete anchor points or the questions should be altered so that the participants would be most likely to choose answers closer to the midpoint of the scale.

A second issue with this study was the number and strength of relationships between the demographic variables and the dependent measures. It became complicated to understand the effects of the intervention, when there were so many other demographic variables that contributed to the scores. In future research, it would be beneficial to do the intervention with more homogeneous samples; for example, only running the study with families whose child

had experienced abuse or neglect or only with families of younger children in order to control for the effects of those variables.

A third limitation of the study was that pretest data was not collected from the intervention group. The purpose for not collecting this information was because we thought that the Touch Survey itself might act as an intervention. A drawback to this method was that the same families' individual scores could not be compared over all four months of the study. In future research, it would be helpful to collect pretest data on all families so that there is pre-intervention baseline information.

Finally, the purpose of the current study was to evaluate a simple intervention. It may be that the intervention was too simple to have a significant measureable impact. It is possible that the intervention would have more of an impact if it were administered or overseen by a family therapist, who could help guide the family. Over the course of the study, several families contacted the researcher because the target child was having some questions or problems with the increase in touch in the home. Increasing nurturing touch may bring up issues in the family, particularly for a child who may have been physically or sexually abused before being adopted. Having a professional guide the family through the process of increasing nurturing touch may be beneficial both for the child and for the parent(s). Having the family read the manual together may also be a way to help the child adjust better to the increase in touch in the home. The intervention may have more of an impact if the families are given more materials about touch, either at the beginning of the study or as a supplement mid-intervention. For example, parent could be sent a video documenting the positive effects of nurturing touch. A third way to make the study more

impactful may be through conducting simple checks with the family every couple weeks to check on their progress and remind them to keep working on the intervention.

Summary

The purpose of the current study was to evaluate the psychometric properties of the Touch Survey and to evaluate the effectiveness of the touch intervention. The Touch Survey was a parent report measure, which was developed for the current research. Factor analysis yielded six conceptually different factors. Although the touch survey shows promise as a measure, modifications should be made before it is used again. The effectiveness of the touch intervention was measured using several methods. Results revealed mixed findings about the overall effectiveness of the touch intervention at increasing touch, family functioning, and decreasing child behavior problems. In general, it is recommended that the touch intervention be modified to increase the impact of the intervention and that the individual differences in families be taken into account when modifying the intervention materials.

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Appendix A

1. **Including yourself, what is the total number of people living in your household? _____**

2. **What is your date of birth (dd/mm/yyyy)? _____**

3. **What are your initials? First ___ Middle ___ Last ___**

4. **What is your education level?**

High school diploma/GED or less	Bachelor's Degree
Some college or less	Graduate Degree

5. **What is your work status?**

Full-time	Student
Part-time	Other
Stay at home parent	

6. **What is your ethnicity?**

African-American	Caucasian
Asian	Hispanic
Other, please specify: _____	

7. **What is your total annual household income?**

Less than $20,000	$40,000 - $60,000	$80,000 - $100,000
$20,000 - $40,000	$60,000 - $80,000	$100,000 or more

8. **What is your religious affiliation?**

Agnostic	Islam	Protestant
Buddhist	Jewish	None
Catholic	Orthodox	Other
Hindu		

9. **How many children do you have? _____**

10. **Please indicate the ages of all your children and circle the type of parent you for that child. For example, I am the (biological, adoptive, step, grandparent, foster, other) parent.**

Child 1: Age ____ I am the (biological, adoptive, step, grandparent, foster, other) parent.
Child 2: Age ____ I am the (biological, adoptive, step, grandparent, foster, other) parent.
Child 3: Age ____ I am the (biological, adoptive, step, grandparent, foster, other) parent.
Child 4: Age ____ I am the (biological, adoptive, step, grandparent, foster, other) parent.
Child 5: Age ____ I am the (biological, adoptive, step, grandparent, foster, other) parent.

11. **Has the target child ever experienced neglect or abuse? __ Yes __ No __Not sure**

12. **What is your living arrangement?**

Living with spouse (married)
Living with romantic partner (not married)
Not living with a spouse/romantic partner (single, divorced, separated)
Other, please specify: _____

If you are living with spouse/romantic partner please answer the following:

13. What is the date of birth of your spouse/romantic partner (dd/mm/yyyy)? _____

14. What is the education level of your spouse/romantic partner?

High school diploma/GED or less	Bachelor's Degree
Some college or less	Graduate Degree

15. What is the work status of your spouse/romantic partner?

Full-time	Student
Part-time	Other
Stay at home parent	

16. What is the ethnicity of your spouse/romantic partner?

African-American	Caucasian
Asian	Hispanic
Other, please specify: _____	

17. What is the religious affiliation of your spouse/romantic partner?

Agnostic	Islam	Protestant
Buddhist	Jewish	None
Catholic	Orthodox	Other
Hindu		

18. Please circle they type of parent in parenthesis. List child in the same order as question #10 above.

Child 1: My spouse/romantic partner is the (biological, adoptive, step, grandparent, foster, other) parent.

Child 2: My spouse/romantic partner is the (biological, adoptive, step, grandparent, foster, other) parent.

Child 3: My spouse/romantic partner is the (biological, adoptive, step, grandparent, foster, other) parent.

Child 4:My spouse/romantic partner is the (biological, adoptive, step, grandparent, foster, other) parent.

Child 5: My spouse/romantic partner is the (biological, adoptive, step, grandparent, foster, other) parent.

19. Please rate your family on the following set of words. Place an "x" in any box between the pair of words.

Studious								Playful
Strict								Lenient
Emotional								Unemotional
Cool								Warm

Connected								Separate
Dependent								Independent

Appendix B

This questionnaire is made up of questions about four different types of touch. Please place an "X" in the box that matches your thoughts and experiences. *None of these questions is meant to gather information on physical punishment. Do not include physical punishment when answering these questions.*

Comforting Touch	Playful Touch	Practical Touch	Controlling Touch
Touch that is meant to consol another who is sad, hurt, or upset. This can also be touch used to support someone facing a challenging situation.	Touch that is meant to convey a positive mood and is fun.	Touch that occurs regularly during the course of everyday situations.	Touch used to change the behavior, attitude or emotional state of another. *This does not include physical punishment.*
Ex.: hugs, holding, arm around shoulder, holding hands, patting or rubbing back, etc.	Ex.: gentle tickling, tousling hair, high fives, gentle pokes, playful holding, etc.	Ex.: bumping, touch while handing an object, holding a hand to help someone out of a car, etc.	Ex.: physically moving a child, physical holding (if they were about to run into the street), holding hands in order to bring the other person along with you, etc.

Part I: Comforting Touch

	Quantity of Touch	None		Very Little		Some		A Lot
1	How much comforting touch occurs between you and your children?	1	2	3	4	5	6	7
2	How much comforting touch occurs between you and your spouse/romantic partner?	1	2	3	4	5	6	7
3	How much comforting touch occurs among other members of your family (not including yourself)?	1	2	3	4	5	6	7

	Importance of Touch	Not Important		Somewhat Important		Important		Very Important
4	How important is comforting touch to you?	1	2	3	4	5	6	7
5	How important is comforting touch to your children?	1	2	3	4	5	6	7
6	How important is comforting touch to your spouse/romantic partner?	1	2	3	4	5	6	7

	Intentions about Touch	Less		Somewhat Less		Somewhat More		Much More
7	In regard to your children, do you intend to have more, less, or the same amount of comforting touch in the future (or next two months)?	1	2	3	4	5	6	7
8	In regard to your spouse/romantic partner, do you intend to have more, less, or the same amount of comforting touch in the future (or next two months)?	1	2	3	4	5	6	7

	Enjoyment of Touch	Not at All		A Little		Some		A Lot
9	Do you enjoy touching your children in a comforting manner?	1	2	3	4	5	6	7
10	Do you enjoy touching your spouse/romantic partner in a comforting manner?	1	2	3	4	5	6	7
11	Do you enjoy being touched in a comforting manner?	1	2	3	4	5	6	7
12	Do your children enjoy being touched in a comforting manner?	1	2	3	4	5	6	7
13	Does your spouse/romantic partner enjoy being touched in a comforting manner?	1	2	3	4	5	6	7
14	Do your children enjoy touching others in a comforting manner?	1	2	3	4	5	6	7
15	Does your spouse/romantic partner enjoy touching others in a comforting manner?	1	2	3	4	5	6	7

Part II: Playful Touch

	Quantity of Touch	None		Very Little		Some		A Lot
16	How much playful touch occurs between you and your children?	1	2	3	4	5	6	7
17	How much playful touch occurs between you and your spouse/romantic partner?	1	2	3	4	5	6	7
18	How much playful touch occurs among other members of your family (not including yourself)?	1	2	3	4	5	6	7

	Importance of Touch	Not Important		Somewhat Important		Important		Very Important
19	How important is playful touch to you?	1	2	3	4	5	6	7
20	How important is playful touch to your children?	1	2	3	4	5	6	7
21	How important is playful touch to your spouse/romantic partner?	1	2	3	4	5	6	7

	Intentions about Touch	Less		Somewhat Less		Somewhat More		Much More
22	In regard to your children, do you intend to have more, less, or the same amount of playful touch in the future (or next two months)?	1	2	3	4	5	6	7
23	In regard to your spouse/romantic partner, do you intend to have more, less, or the same amount of playful touch in the future (or next two months)?	1	2	3	4	5	6	7

	Enjoyment of Touch	Not at All		A Little		Some		A Lot
24	Do you enjoy touching your children in a playful manner?	1	2	3	4	5	6	7
25	Do you enjoy touching your spouse/romantic partner in a playful manner?	1	2	3	4	5	6	7
26	Do you enjoy being touched in a playful manner?	1	2	3	4	5	6	7
27	Do your children enjoy being touched in a playful manner?	1	2	3	4	5	6	7
28	Does your spouse/romantic partner enjoy being touched in a playful manner?	1	2	3	4	5	6	7
29	Do your children enjoy touching others in a playful manner?	1	2	3	4	5	6	7
30	Does your spouse/romantic partner enjoy touching others in a playful manner?	1	2	3	4	5	6	7

Part III: Practical Touch

	Quantity of Touch	None		Very Little		Some		A Lot
31	How much practical touch occurs between you and your children?	1	2	3	4	5	6	7
32	How much practical touch occurs between you and your spouse/romantic partner?	1	2	3	4	5	6	7
33	How much practical touch occurs among other members of your family (not including yourself)?	1	2	3	4	5	6	7

	Importance of Touch	Not Important		Somewhat Important		Important		Very Important
34	How important is practical touch to you?	1	2	3	4	5	6	7
35	How important is practical touch to your children?	1	2	3	4	5	6	7
36	How important is practical touch to your spouse/romantic partner?	1	2	3	4	5	6	7

	Intentions about Touch	Less		Somewhat Less		Somewhat More		Much More
37	In regard to your children, do you intend to have more, less, or the same amount of practical touch in the future (or next two months)?	1	2	3	4	5	6	7
38	In regard to your spouse/romantic partner, do you intend to have more, less, or the same amount of practical touch in the future (or next two months)?	1	2	3	4	5	6	7

Part IV: Controlling Touch

	Quantity of Touch	Very Little		Some		A Lot		Very much
39	How much controlling touch occurs between you and your children?	1	2	3	4	5	6	7
40	How much controlling touch occurs between you and your spouse/romantic partner?	1	2	3	4	5	6	7
41	How much controlling touch occurs among other members of your family (not including yourself)?	1	2	3	4	5	6	7

	General	Very Negative		Somewhat Negative		Somewhat Positive		Extremely Positive
42	What is your overall attitude about touch?	1	2	3	4	5	6	7
43	What are your children's attitudes about touch?	1	2	3	4	5	6	7
44	What are your spouse/romantic partner's attitudes about touch?	1	2	3	4	5	6	7

Part V: All Kinds of Touch

		Decreased			Stayed the Same			Increased
45	Over the past two months, the amount of time/effort that I have put into learning about touch has:	1	2	3	4	5	6	7
46	Over the past two months, the amount of time/effort I put into touching others has:	1	2	3	4	5	6	7
47	Over the past two months, the amount of time I spend thinking about touch has:	1	2	3	4	5	6	7

VITA

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ABSTRACT

THE EFFECTS OF A TOUCH INTERVENTION ON NURTURING TOUCH, FAMILY FUNCTIONING, AND CHILD BEHAVIOR

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The purpose of the current study was to test an intervention aimed at increasing nurturing touch in families with young children. The effectiveness of the intervention was also be tested by examining family functioning and child behavior problems. The intervention was comprised of a manual on the topic of touch along with specific exercises involving touch for the family to do in the home.

The primary research objective was to evaluate the effects of the touch intervention on touch in the home, family functioning, and child behavior. Based on this primary research objective, it was expected that: 1) The families who use the touch manual will demonstrate better touch, family functioning, and child behavior outcomes than the families who do not use the touch manual; 2) Families who use the touch manual for a longer period of time will demonstrate better touch, family functioning, and child behavior outcomes than families who use the manual for a shorter period of time. The secondary research objective was to investigate the psychometric properties of the Touch Survey.

The participants in this study were families who had at least one adopted child between the six and twelve years of age. Participants completed demographic information and the Touch Survey, FAD, and CBCL at two-months and four-months.

The results indicate that the psychometric properties of the Touch Survey are promising, although should be revised based prior to future use. The results also indicate that the family and child demographics have a larger effect on data between intervention and no intervention outcomes. However, it was found that touch and family functioning improve for participants who have been in the intervention for a longer time period. Implications, limitations, and ideas for future research are discussed.