2017

The Effectiveness of Individualized and Rehabilitative Therapies for Children in Foster Care

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Walden University
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MS, Walden University, 2007

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Counseling Psychology

Walden University

December 2017

Abstract

Children placed in foster care face considerable stress and trauma related to being removed from their homes and subsequently living in a new environment. They may exhibit severe disruptive or antisocial behavior as a consequence. Clinicians and researchers often have not considered that these behaviors may be due to children's underdeveloped cognitive control and response. Treatment approaches that offer more holistic perspectives on stress and the inclusion of individual and specialized therapies may help foster children to better control their responses and return to their biological families sooner. The purpose of this study was to focus on whether individual therapy and the inclusion of rehabilitative strategies decreased severe disruptive/antisocial behavior in children placed in foster care or foster homes. Using archival data, disruptive behavior tallies were compared between foster children who began individual therapy and then the same children with the inclusion of rehabilitative strategies. A significant decrease in disruptive behavior was found with foster children within three months of individual therapy and then again, three months after the inclusion of rehabilitative strategies, regardless of gender. Gender was found to have no significance in participants' response to treatment. Findings demonstrate the value of using multiple treatments for decreasing disruptive behavior in foster children. Using multiple treatments, clinicians may be better able to help children positively transform their lives as they navigate the foster care system, resulting in potential positive social change.

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Dedication

This paper is dedicated to my husband, Michael and my daughter, Lizzie. Thank you for your patience and understanding. Dr. Thompson, your expertise in Chapter 3, was "what the Dr. ordered"; thank you. Lastly, to my mentor, Dr. Michael T. Plasay: thank you is not enough to express my sincerest and humblest appreciation. Thank you for going beyond the call of duty.

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Chapter 1: Introduction to the Study

Introduction

Children and teenagers are capable of displaying disruptive behaviors that can result in anger, frustration, and hostility on the part of their caregivers (Benson, 2006). Under normal circumstances, these disruptive behaviors are usually seen as a consequence of the developmental stages children pass through (Benson, 2006). However, children living in the foster care system are often under additional stress due to their living with caregivers with whom they are unfamiliar and, in most cases, attending different schools with different teachers and classmates (Chamberlain, 2003). With these additional stressors, disruptive behavior can become more than just pushing boundaries and testing limits (Benson, 2006).

Some foster children often require more attention in the form of rehabilitative services (Chamberlain, 2003). Unless required, foster children typically do not receive rehabilitative services. However, foster children who require treatment-based services traditionally receive treatment to reduce disruptive behavior via one of two strategies: traditional therapy or a two-tiered rehabilitative/therapeutic strategy (Chamberlain, 2003). Traditional therapy in this context is individual therapy with a foster child. Rehabilitative/therapeutic strategy is the inclusion of additional services, that is, group therapy, educational opportunities for caretakers specific to the child, home visits by therapist, and so forth. However, there remain questions as to which one of the two strategies is more effective (Chamberlain, 2003). In current research, there has not been sufficient information on the effectiveness of the two-tiered approach of coupling

individual therapy with rehabilitative services for foster children. There is a gap in the literature in that it is unclear if the effects of individual therapy alone are sufficient for addressing disruptive behaviors or if foster youth would benefit from additional rehabilitative, multidisciplinary services as described above. The potential positive social change implication of this study is to use different rehabilitative/therapeutic strategies to decrease disruptive behavior among foster children.

Background

There exists a gap in the literature as researchers have yet to study the combination of individual therapy coupled with rehabilitative therapy interventions on correcting behavior problems in children who are placed to live within the foster care system. O'Toole and Kirkpatrick (2007) suggested combining rehabilitative services with individual therapy to provide successful treatment outcomes sooner than with traditional treatment methods alone.

One such multidisciplinary approach is intensive treatment foster care (ITFC). ITFC is a derivative of the original evidence-based approach of generating positive results for high-risk youths, called multidimensional treatment foster care (MTFC; Chamberlain, 2003; Chamberlain & Reid, 1998). ITFC is comprised of specifically trained parenting along with individual therapy and rehabilitative services. ITFC simultaneously trains and arms foster parents with specific services to continue supporting the foster youth, foster parents, and families within the community (Chamberlain, 2003). The aim for at-risk foster children who participate in the ITFC is to prove stability or amelioration in the youth's behavioral and emotional disorders.

Problem Statement

Previous research has demonstrated that individual therapy and ITFC each separately are effective on foster children who display disruptive behavior (O'Toole & Kirkpatrick, 2007). There has been no research on the effects of combining rehabilitative services with ITFC and individual therapy (O'Toole & Kirkpatrick, 2007). O'Toole and Kirkpatrick (2007) examined the lack of research about the benefits of using collaborative therapeutic rehabilitative services in conjunction with individual therapies. O'Toole and Kirkpatrick found that combining individual therapy and rehabilitative services can lead to a decrease of disruptive behaviors. O'Toole and Kirkpatrick discussed how the treatment team expressed a higher level of understanding with the child's personal point of view and therapeutic progress. While O'Toole and Kirkpatrick discussed the benefits of combining treatments, there has been a lack of research examining parental daily report (PDRs), ITFC, before-and-after treatments, and the differences among genders in response to the therapies. This analysis could lead to more cost effective treatment strategies with foster care boys and girls effecting overall positive social changes both socially and economically.

Purpose of the Study

The purpose of this quantitative study was (a) to determine if there are reductions in disruptive behavior (the dependent variable) as measured by PDRs among foster children who have been placed in ITFC homes (i.e., who are undergoing individual and rehabilitative services) compared to those who have received individual therapy alone

and (b) to determine if gender influences treatment effectiveness, based on treatment modality and reduction in disruptive behaviors.

Research Question and Hypotheses

Following are my research questions and hypotheses:

RQ1: Is there is a reduction in disruptive behaviors with the inclusion of rehabilitative services and individual therapy when compared to individual therapy alone?

$H_1$1: There is a significant reduction of disruptive behaviors with the inclusion of rehabilitative services and individual therapy compared to individual therapy alone.

$H_0$1: There is no difference in reduction of disruptive behaviors with the inclusion of rehabilitative services and individual therapy when compared to individual therapy alone.

RQ2: Are there noticeable differences in disruptive behavior depending on the gender of the individual undergoing therapy alone?

$H_1$2: There are differences with disruptive behaviors depending on gender undergoing individual therapy alone.

$H_0$2: There are no differences with disruptive behaviors depending on gender undergoing individual therapy alone.

RQ3: Are there noticeable differences in disruptive behavior depending on the gender of the individual undergoing rehabilitative services?

$H_1$3: There are differences in disruptive behavior depending on gender undergoing individual/rehabilitative therapy.

$H_0$3: There are no differences in disruptive behaviors depending on gender undergoing individual/rehabilitative therapy.

Theoretical Framework for the Study

The theoretical framework derived from Bronfenbrenner's (2005) ecological systems theory, otherwise known as bioecological systems theory. This theory addressed a child's development within a context of a system of relationships that create his or her environment. This system included the following: culture, school, community, family, and religion. It is that interaction among the child's primary biology and his or her immediate family or community that directs development (Bronfenbrenner, 2005). Thus, better understanding the child means of his or her understanding the environment and the interaction of that environment on the child. It is through this lens that the development of ITFC was developed.

In Chapter 2, I discuss Bronfenbrenner's (2005) human ecology theory of how human beings have the ability to change their behavior based on the environment, bridging current research with the opportunity of changing disruptive behavior among children and adolescents. This quantitative study used archival data that provided further evidence that included other systems (i.e. microsystems, macrosystems, etc.) that facilitated continued positive behavioral change in foster care children.

Hummer, Wang, Kronenberger, Dunn, and Mathews (2014) noted that disruptive behaviors in children and adolescents can become increasingly harmful without adult guidance and supervision. Dahmen, Pütz, Herpertz-Dahlmann, and Konrad (2012) identified adult guidance and supervision as nonpathogenic care. They posited pathogenic

care from primary caregivers, such as general neglect, who have been placed in foster care. Early separation from parents, or change of caregivers, significantly influenced and changed the early developing brain of children and adolescents (Dahmen, et al., 2012).

Bronfenbrenner's (2005) theory did not differentiate between genders. Rhoades, Chamberlain, Roberts and Leve (2013) discussed the lack of studies about females who elicited disruptive behaviors, who posited that there should be more research given how the criminal arrest rates of females has risen over the past 10 years. Rhoades et al. reported that in 2013, the Department of Public Health reported an increase of females involved in drug use, unintended pregnancies, as well as incurring mental health issues.

Previous researchers who used Bronfenbrenner's (2005) ecological systems theory included Chamberlain and Reid (1998), who compared two groups of male adolescents with chronic and serious juvenile delinquencies. These two male groups participated in multidimensional treatment foster care (labeled *MTFC*, though this is synonymous with *ITFC* in the current study's usage) or group care (GC) and were compared in terms of their criminal behavior, incarceration rates, and program completion outcomes (Chamberlain & Reid, 1998). Results showed that boys who participated in MTFC had significantly fewer criminal referrals and returned to live with relatives more often.

However, what researchers have not yet done is compare treatments, that is, the individual therapy versus rehabilitative strategies, in terms of efficacy in reducing disruptive behaviors. In addition, researchers have traditionally used male participants, but it is unclear if females react to the same treatment modalities in the same way.

Nature of the Study

This quantitative study used archival data from foster children whose foster parents reported daily behavior via the PDR. This study was a one sample, repeated measures design. The behavior sample was composed of two weeks of PDR records at various times in the programs. PDR's were sampled from participants when entering the program and beginning individual therapy. After 3 months, before they entered the rehabilitative module, a 2-week sample was recorded. This recorded information represented a post- therapy measure, as well as a pre-rehabilitation measure. A final 2-week sample was collected representing post-rehabilitation behaviors. The study examined post-therapy minus pre-therapy comparisons to post-rehabilitation minus pre rehabilitation. In addition, gender responsiveness to the two different treatment modalities was assessed. No structured analysis of the original archival data exists.

The sample came from foster care children who were clients of Penny Lane Centers – Foster Family Agency (PLC-FFA). The procedure and data collection relied solely on previously archived daily behavioral logs—the PDR—gathered from foster parents who documented disruptive daily behaviors and submitted them to PLC-FFA on a weekly basis.

Definitions

I have provided the following definitions to guide and familiarize readers with key terminology used in this study:

Conduct disorder (CD): A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated;

this disorder is manifested by the presence of aggression to people, destruction of property, deceitfulness or theft, or serious violations of rules (American Board of Professional Psychology, n.d.).

Department of Children and Family Services (DCFS): DCFS is a state-level entity tasked with protecting at-risk children, defending the rights of Child Welfare Services (CWS) recipients, maintaining family integrity and ensuring county compliance with applicable laws and regulations (Department of Social Services - State of California, 2008).

Disruptive behavior: Individuals who demonstrate the following behaviors; impulse-control; conduct disorders that include conditions involving problems in the self-control of emotions and behaviors; problems in emotional and/or behavioral regulation in behaviors that violate the rights of others (e.g., aggression, destruction of property) and/or that bring the individual into significant conflict with societal norms or authority figures *(Diagnostic and statistical manual of mental disorders: DSM-5, 2013)*.

Disruptive behavior disorder (DBD): A term used to describe a pattern of serious troublesome behavior (American Board of Professional Psychology, n.d.).

Family: The biological birth family of the child or children. The family is counseled on discipline, supervision practices, and behavior management. Therapy can also be provided to transition into having the child(ren) return to the home, provide positive relationships, and reduce conflict (Hathaway-Sycamores Child and Family Services, n.d.).

Foster care: Twenty-four hour substitute care for children placed away from their parents or guardians and for whom the state agency has placement and care responsibility (Department of Social Services - State of California, 2008).

Foster care social workers: Social work staff trained to assess the needs of children under the care of the agency (Department of Social Services - State of California, 2008).

Foster family agency: Organization established to recruit, certify, train, and support parents who serve as foster parents as well as match eligible foster homes with children in need of temporary or permanent placement (Department of Social Services - State of California, 2008).

Foster parent(s): Individuals (single or married) who take infants, children, or adolescents into their homes and take care of them for as long as children need. Together, they become a foster family (Department of Social Services - State of California, 2008).

Group care/group home (GC/GH): A home where a small number of unrelated people in need of care, support, or supervision can live together, such as those who are elderly or mentally ill (National Institute of Justice, n.d.).

Intensive treatment foster care (ITFC): ITFC placement of high-risk foster children with specially trained foster parents whose care will be focused on the one child. ITFC serves as an alternative to placement in group care facilities (Hathaway-Sycamores Child and Family Services, n.d.).

Multidimensional treatment foster care (MTFC): MTFC is an alternative behavioral treatment for children with antisocial, behavior, or delinquency issues. MTFC is a nonresidential placement setting (National Institute of Justice, n.d.).

Multidimensional treatment foster care/Intensive treatment foster care: The combination of MTFC and ITFC is a 6- to 12-month placement program with the child placed in a family setting with specially trained foster parents who act as part of the treatment team. The child receives specialized structure and supervision from the foster parents (National Institute of Justice, n.d.).

Oppositional defiant disorder (ODD): A recurring pattern of disruptive, hostile, disobedient, and defiant behavior in a child or adolescent, lasting for at least 6 months without serious violation of the basic rights of others (American Board of Professional Psychology, n.d.).

Parent daily report (PDR): Considered an effective alternative to independent observation in a child's natural setting. The PDR is a short 5- to 10-minute telephone interview with parents regarding the child's behavior over the past 24 hours (Mash & Barkley, 2009).

Placements: A foster care home is defined as a placement (Department of Social Services - State of California, 2008).

Rehabilitative services: Rehabilitative services are specialized services that assist an individual with additional treatments required to resume optimal functionality (American Board of Professional Psychology, n.d.). Such treatments would focus on chronic or congenital illness or injury. Services can include varying types of therapy to

assist clients such as therapeutic behavior services or wrap-around services. The mental health provider enters the client's home two to five times a week providing one-to-one sessions with the client while incorporating the parents and family members (American Board of Professional Psychology, n.d.).

Therapeutic behavioral services (TBS): Short-term treatment services between a child and mental health provider intended to maintain residential placement while addressing specific behavior and achieving short-term goals. This can occur two to five times a week in the home with parents, the client, and the TBS provider. During the sessions, the parent, client, and, TBS provider outline stress-management methods such as completing chores, detailing ways to de-escalate anger/stressful situations, completing homework, or collaborating with the parent and client on creating a homework schedule (Hathaway-Sycamores Child and Family Services, n.d.).

Traditional therapeutic services: More commonly referred to as *psychotherapy* or *talk-therapy*, where a patient speaks one-on-one with a counselor as a means of treating psychological issues rather than through the use of medication (Mayo Clinic Staff, 2013).

Treatment team: The MTFC/ITFC team provides support and consultation to foster parents. Its purpose is to monitor the child's progress through weekly meetings reviewing daily behavioral information and to modify the treatment plan as necessary. It consists of a program supervisor, a family and individual therapist, a child-skills trainer, and the daily telephone contact person (Hathaway-Sycamores Child and Family Services, n.d.).

Wrap-around services: This program "wraps" services and supports around a child and family to prevent the child from leaving home to receive services. Wrap-around services include, but are not limited to: sports, homework tutors, art programs, dance classes, girls/boys club, and community services (Hathaway-Sycamores Child and Family Services, n.d.).

Assumptions, Limitations, and Scope of the Study

This current study proposed a pretest-posttest design through a structured table that exhibited a specialized group of foster care children placed in a foster care home. This is a risk of minimal internal validity, such as significance between the two periods; and treatments could be due to factors other than the additional treatment/time in treatment alone. This is due to the archival nature of the data and internal structure of the organization. To increase internal validity would require a reversal of treatments to demonstrate that one type of treatment significantly added to another. The addition of a waiting list control group would have also added to the internal validity; however, not meeting the needs of foster children for the sake of research would be unethical. While the limitation is significant, it is important to note that the study continued to have value. There is absence of statistical significance between the two periods and this could have a real pragmatic significance: Should a company expend additional funds towards the reduction of disruptive behavior without results, or is it more cost effective to focus in other areas that benefitted the foster children or parents? This proposed one-group pretest-posttest design had minimal external validity because the generalizability to other groups is quite limited. This is again due to the archival nature of the data, the lack of a

control group, and the inability to reverse treatments. This is a specific group of specialized foster care children whose behaviors are so severe that they have been categorized as behaviorally disruptive children. This proved to be a challenging limitation; however, the absence of results had significance for other programs that rely on previous research with large expenditures of monies without proper ongoing assessment of those additional resources (Westermark, Hannson, & Olsson, 2011).

Summary

The purpose of this study examined the effectiveness of individualized and rehabilitative therapies on the behavior of foster children placed in intensive treatment foster homes. This information will benefit program supervisors, foster care social workers, and clinicians in envisaging recidivism (Kazdin & Durbin, 2012). The study is based on static—that is, unchanging—data that provided information that substantiates the theory that additional services can prove to be beneficial despite being finite in its presentation. In Chapter 2, the literature examined the effectiveness of additional services.

Chapter 2: Literature Review

Introduction

Foster care began in the United States in 1853 in order to provide immigrant and abandoned children sleeping in the streets of New York homes and a family life (Oswald, Heil, & Goldbeck, 2010). According to the U.S. Department of Health and Human Services (2015), an average of 650,000 children have spent significant time in the foster care system with an additional 415,000 added in 2015; these numbers continue to rise. Standard approaches to placement have institutionalized children or placed them in a residential or group care facility that houses six to eight children (National Survey of Child and Adolescent Well-Being, 2015). Not all children or adolescents in foster care successfully adapt to their new surroundings. Some children have displayed disruptive behavior while in foster care and require mental health treatment (Bruce et al., 2009).

With rising numbers of foster care placements, disruptive behavior risks have increased. In a recent study by Sala, Testa, Pons, and Molina (2015), children in foster care showed a higher risk for mental health issues and emotional and behavioral disruptive disorders; these issues and disorders are challenging for foster parents. In addition, the number of children and youth who have emotional and behavioral disruptive behaviors and who have had difficulty-securing placement in foster homes has increased (Sala et al., 2015). Disruptive behaviors among children in the foster care system consist of hyperactivity, attention deficit/impulsivity, and disruption (Sala et al., 2015). These behaviors have affected the foster home's success or failure based on the relationship between foster children and their assigned foster parents/family (Sala et al., 2015).

Increases in mental health issues and emotional and disruptive behaviors among foster children decreasing foster home failures have prompted a need for an intensive program called ITFC (Sala et al. 2015).

Comparatively, Larsson et al. (2009) examined 127 Norwegian children ages 4-8 years diagnosed with oppositional defiant disorder (ODD) or conduct disorder (CD) in a randomized controlled study. In a pre and postmeasure of behavior, Larsson et al. found that postmeasure results revealed decreased behavior associated with ODD and CD when parents were properly trained while the children were receiving therapy. In contrast, control condition results of children diagnosed with ODD or CD behaviors did not improve and became worse during the study (Larsson et al., 2009). Treatment analysis revealed a reduction in stress among parents and children with aggressive behavior while communication among parents improved (Larsson et al., 2009).

ITFC was developed in 1990 and is a broader term encompassing the use of evidence-based interventions, with a wider population served (Chamberlain, 2003). ITFC interventions are focused on behavioral disturbances that are disruptive (Chamberlain, 2003). ITFC is provided by a foster family agency working with home placement for children and youth with serious disruptive behavioral issues (USDHHS, 2015). These children may have otherwise been placed into an institutional setting. Instead, additional support is provided to foster families to parent the ITFC child/youth.

Although often used interchangeably in the field, ITFC is not the same as multiple treatment foster care or MTFC. MTFC is another evidence-based program created in the 1980s used to treat children with severe emotional disturbances as an alternative to high-

end residential or institutional care (Chamberlain, 2003). MTFC focuses on more specialized training for foster parents, requiring the foster parents to play a stronger role in the clinical treatment team. Both entail the use of specialty trained foster families and outside therapeutic service/support systems to help stabilize the child (Chamberlain, 2003).

The purpose of this chapter was to examine the conceptual framework underpinning most treatment strategies currently used to handle disruptive behavior among foster children. Various rehabilitative efforts and their effectiveness are reviewed. I also discuss how my study filled a gap in the literature.

Literature Search Strategy

This review of the literature includes material from various books and articles obtained from the following online search databases: Psychology SAGE database, PsycINFO, PsycARTICLES, SocINDEX, Criminal Justice Periodicals, and Google Scholar. I conducted a thorough search via the Internet using publication dates ranging from 1957 to 2016. I used the following keywords: *foster children*, *behavior problems*, *disruptive behavior*, *multidimensional treatment foster care (MTFC)*, *intensive treatment foster care (ITFC)*, *child protective services (CPS)*, *foster parents*, *therapeutic rehabilitative services*, *foster care maltreatment*, *cognitive control with disruptive children*, *selective attention*, *inhibitory control*, *foster care programs*, *parent daily report checklist*, *foster care social workers*, *health risk behaviors*, *residential care*, *juvenile justice systems*, *intensive parenting*, *family support*, *skill building*, *post-traumatic stress disorder symptoms in children/adolescents*, *adolescent substance abuse*, *adolescents*,

family therapy, *multidimensional family therapy (MDFT)*, *substance abuse behavior problems*, *foster care (FC)*, *placement disruption*, *preschool period*, *threshold effect*, *oppositional defiant disorder*; *conduct disorder*; *executive function*; *adolescence*; *reactive attention disorder (RAD)*, *attention deficit hyperactive disorder (ADHD)*, *ADHD-like symptoms*, *early pathogenic care*, *early separation*, *neurodevelopment*, *female delinquency*, *interdisciplinary treatment approach*, *major depression*, *suicidal ideation*, *males*, *females*, *girl*, *boys,* and *gender*. Specific keyword searches, searches based on the reference lists of related articles, and an archived dataset provided by a private sector, nonprofit foster family agency database were the sources of the literature and raw data used for the study.

Theoretical Foundation

The human ecology theory as proposed by Bronfenbrenner (2005) studied how individuals related within their communities and then into society. The theory also addressed how human beings change according to their environment, which influenced and affected behavior and development. Bronfenbrenner's human ecology theory set the foundation for understanding how changing human beings can be is possible, along with an environment conducive to such change, disruptive behavior can decrease. The bioecological model that influences a human being's developmental life consists of the following systems: microsystem, mesosystem, ecosystem, macrosystem, and chromosystem.

Microsystem

The first level is a system closest to the human being, such as home, school, daycare, or work (Bronfenbrenner, 2005) The relationship the human being has as he/she reacts to people in this first level of systems is called a bi-directional relationship, where the human being is reacting to his/her microsystems of either home, school, or daycare. According to Bronfenbrenner (2005), this level is the most influential.

Mesosystem

The next level is connecting microsystems, linking family and teachers with the child's peers and his or her family (Bronfenbrenner, 2005). The person's individual microsystem is unable to function properly alone; however, interactions, connecting/linking the child with school, and teacher and parent-teacher conferences pose a direct and positive effect on the child as an individual (Bronfenbrenner, 2005).

Ecosystem

This term refers to a child's nonnative role within a social setting that links a child's experience, such as a child's experience through the foster system (Bronfenbrenner, 2005). These experiences affect the child on his/her developmental process (Bronfenbrenner, 2005).

Macrosystem

Cultural context includes developing/industrialized countries and socioeconomic status (Bronfenbrenner, 2005). Poverty and ethnicity influences a child's experience. Members of a cultural group share a common identity, heritage, and values. The

macrosystem evolves through time because each successive generation may change the macrosystem leading to their development in a unique macrosystem (Bronfenbrenner, 2005).

Chromosystem

A pattern of events occurring through biological, environmental, and/or sociohistorical circumstances in the course of a child's life (e.g., environmental: negative effects of divorce affecting children in the first year after the divorce, after two years the child becomes more stable in time; biological: genetics, disease). Sociohistorical opportunities have increased for women pursuing a career in the last 30 years (Bronfenbrenner, 2005).

Bronfenbrenner's (2005) theory stipulated that each system is composed of roles, rules, and norms that shape the psychological development of human beings, He stipulated that the inclusion of biological, ecological, and environmental systematic approaches enable a better understanding of human and social development even though children develop differently regardless of the child's conscious efforts to affect this development. The theory explains how the community and culture shape the developmental needs to children, whether individually or in unison (Bronfenbrenner, 2005). Bronfenbrenner's theory has supplied a framework for parents and teachers by surrounding the child with a positive environment, a recipe for a child to develop and succeed (Bronfenbrenner, 2005). The literature review bridges the conceptual foundation of Bronfenbrenner's human ecology theory with the current research on disruptive behavior among children and adolescents. I examined the addition of a mesosystem

approach on a current microsystem and reviewed the literature related to the definition and constructs of interest (i.e., rehabilitation styles, differences between ITFC/MTFC, disruptive behavior, gender considerations, and Parent Daily Report) and chosen methodology and methods to better describe the scope of this study.

Literature Review Related to Key Variables and/or Concepts

Rehabilitation Styles

Based on Bronfenbrenner's (2005) conceptual framework of the biological model and specifically the microsystems and mesosystems, behaviors exhibited by the child/youth through his or her life influence the relationship experiences of the child within the foster care placement. These disruptive behaviors affect the child/youth's future as demonstrated by Benson (2006), who posited that disruptive behaviors of children in the foster care system consist of behavioral problems such as hyperactivity, attention deficit/impulsivity, and disruption, which have increased numbers of foster care placements. Bruce et al. (2009) discussed how repeated caregiver disruptions and multiple home placements play a significant role in early adverse experiences a child undergoes, thereby influencing a child's cognitive control and response. In a recent study, Sala et al. (2015) reported that children in foster care showed a higher risk for mental health problems and behavioral disruptive disorders, which was a challenge for foster parents. In addition, increasing numbers of children and youth who have emotional and behavioral disruptive behaviors have been unsuccessful in securing placement in foster homes (Sala et al., 2015). However, the concept of *treatment* is not simple to

define. Treatment often requires combining therapeutic modalities which, without proper definition and clarification, can lead to ineffectiveness (Bruce et al., 2009).

As reported by Kerr, DeGarmo, Leve, and Chamberlain (2014), rehabilitative services, strives to understand children diagnosed with varying mood disorders, ranging from depression, disruptive behavior to conduct disorder, adding that disruptive behavior problems stem from comorbid behaviors/mood disorders. These comorbid behaviors/mood disorders range primarily from depression leading to severe suicidal ideations and risks (Kerr, et al., 2014). During CBT trials, youth diagnosed with depression/depressive mood disorders were unable to respond effectively to CBT treatment response as opposed to control subjects with other behavioral disorders (Kerr et al., 2014).

Chamberlain (2003) studied and researched several approaches with one that offered an implementation on a "behavioral reinforcement model" (p. 71) which he termed MTFC. This approach included several etiological factors based on the social learning theory and has been successfully used for severely delinquent youth (Chamberlain, 2003). MTFC bases its efficacy on using several interventions that incorporate the family following a model yielding behavioral reinforcements. Such reinforcements include effective parent management (Chamberlain, 2003).

Fisher et al. (2009), demonstrated how hypotheses 1, RC will be compared in a one way repeated ANOVA analysis to TC at three time points. For hypothesis 2 and 3, TC and RC's of the genders were compared in a 2 X 2 repeated measures of analysis and conducted as secondary variables for TC and RC. Fisher et al (2009) referred to various

developments addressing evidenced-based interventions to provide additional interventions for supporting children who have endured "multiple foster home placements failures" (p. 125). It is believed these youths can benefit from individual services to promote "skill development and self-regulation," which aid in children attaining stability in a foster home (Fisher et al., 2009).

The MTFC program had several versions that have been successful in random clinical trials throughout the United States (Fisher et al., 2009). Developed in the 1990s, the ITFC was created owing to the increase of mental health problems and disruptive behaviors (Sala et al. 2015) and the need to decrease foster home failures. ITFC is defined as a foster care home placement for children and youth with serious disruptive behavioral issues (who may have been alternatively been placed into an institutional setting) with additional support provided to foster families to parent the ITFC child/youth (USDHHS, 2015). This program has shown the ability of youth to achieve permanency and decrease children's delinquency, as well as disruptive and antisocial behavior in foster homes and schools (Fisher et al., 2009).

A systemic ITFC research study performed by Hahn et al. (2004) used a randomized controlled group to determine the effects of ITFC on males. The group of males ranged between the ages of 12 and 17 years, whose disruptive behavior consisted of felony assaults such as aggravated assault, sexual assault, and gang fights. After participating in the ITFC program, the male participants committed 73.5% fewer felony assaults. Hahn et al. reported that this reduction was attributed to the youth who reported that having a positive relationship with a caregiver significantly affected decreasing their

disruptive behaviors. Hahn et al. reported that ITFC provided an intervention with the reduction of violence among juveniles who have had a history with chronic delinquencies. Evidence from Hahn et al. (2004) found that the ITFC interventions for preventing violence among adolescents are effective.

Individual Therapy Efficacy

According to Prather (2007), abused children who have been placed in foster care have emotional and behavioral symptoms from previous trauma experiences from their parents or caregivers. Prather (2007) noted that the use of external reinforcements such as individual and family therapies can begin to mend and reconnect the abused child to their parent/caregiver. Prather also examined the importance of using other types of appropriate mental health agents in providing behavioral treatment for abused children. These included important role models stemming from family members to external reinforcing agents. The notion of relying on traditional therapy alone raises the question that if long-term consequences of abuse and trauma must rely solely on one mode of therapy and discount the importance of outside reinforcements of therapeutic alliances, have we discredited the many facets of emotion and behavior (Prather, 2007).

Chor, McClelland, Weiner, Jordan, and Lyons, (2012) conducted a pilot study where three evidence-based treatments (EBTs) were provided to children and adolescents in foster care who endured trauma. The EBTs were conducted by a clinician offering individual therapy. The study included 216 foster children ages 3 to 18 with 55% being female. The outcomes concluded that the pre- and post-treatments showed a behavioral improvement in each of five domains: behavioral/emotional needs, risk behaviors, life

domain functioning, traumatic stress symptoms, and child strengths. The areas of greatest improvement were among traumatic stress symptoms, life domain functioning, and risk behaviors. This showed that individual therapy provided a significant understanding of behavioral changes for children who undergo traumatic stress symptoms.

Gender Differences in Disruptive/Aggressive Behavior

A study performed by Schaeffer et al. (2006) tested disruptive/aggressive behavior among children. The differences in behavior between males and females were examined by a longitudinal study in which Schaeffer et al. (2006) examined 1,137 children - 558 girls and 579 boys. Behavioral assessment data was collected and tallied in first grade, then again from second through the fifth grades, and finally a structured clinical interview was conducted with those youths between the ages of 19 and 20 years. The data collected consisted of teacher reports that measured aggressive-disruptive behaviors, attention-concentration problems and peer rejection. The results from this study found aggressive-disruptive behavior significant among girls. Both boys and girls displayed significant levels of antisocial behavior with boys ranking higher than girls. These findings suggested assistance in early identification and appropriate prevention and intervention efforts among males and females (Schaeffer et al., 2006).

Kerr et al. (2014) performed a study of adolescent girls between the ages of 12 and 17 years using the Columbia Suicide Severity Rating Scale, the Brief Symptom Inventory and the Center for Epidemiologic Studies Depression Scale. The study began with nine years of random samples of delinquent females with a juvenile justice system

record and concluded with a two- year follow-up of those females considered more likely to experience suicidal ideations and adult depression. These results indicated that delinquent females who received MTFC exhibited a reduction in delinquent behavior. These delinquent females had a reduction in relationships with "deviant peers", as well as, improved school attendance, completion of homework, and decreases in pregnancy (Kerr et al., 2014, p. 686). The positive effects of female children/adolescents utilizing the MTFC programs are decreased problem behavior and thereby deterred disruptive prosocial behaviors with future domino episodes that may lead to risk factors such as depression and suicidal ideations (Kerr et al., 2014).

Gender Differences in Individual Therapy

The trend of behavioral problems among females had the Juvenile Justice and Delinquency Prevention Act addressing the specific needs for females requiring services within the juvenile justice system. The act now has a requirement to address the surging population among delinquent females (American Bar Association & National Bar Association, 2001; Sickmund, 2009). This trend indicated increasing behavioral problems in females who were found to have more propensities for anxiety and affective disorders versus boys (Brack, Huefner & Handwerk, 2012). National service providers contracted with child social services have requested a mental health program to provide specific treatment tailored to females who are in foster care (Brack, Huefner & Handwerk, 2012). According to Conrad, Placella, Tolou-Shames, Rizzo & Brown (2014) gender-responsive interventions are needed to decrease juvenile delinquent recidivism based on sexual and physical abuse history of female juveniles.

Shechtman (2003) performed a study comparing individual and group therapy among 102 aggressive males. The male population consisted of 32 elementary students' grades 3 through 6. Teachers identified boys through a questionnaire separating highly aggressive and nonaggressive children. The treatment groups consisted of 25 group treatments and 26 individual treatments. Fifty-one different therapists administered the treatments.

Shechtman (2003) discovered that the differences between group and individual therapy are the significant factors influencing behavior such as group cohesiveness, catharsis and the development of social skills. The study found that males with aggressive/disruptive behaviors are less apt to acquire problem-solving skills from each other within a group therapeutic setting. It was also found that male children/adolescents became self-aware and gained insight when participating in individual therapy and cognitive therapy treatment modality while faced with identifying their problem and promoting a positive behavioral change. Shechtman found that males in individual therapy were able to express themselves more freely when not surrounded by others.

According to Shechtman (2003), female children were able to progress therapeutically and learn more in both individual and group settings. In a group setting, girls progressed with their treatment when having the ability to identify with others, as well as learning from other's experiences. In an individual setting, the study found that females with aggressive/disruptive behaviors who participated in a cognitive therapy treatment modality were more "insightful and self-aware" when identifying their problems (p.492).

Parental Daily Report (PDR)

To understand the importance of the development of the PDR as a systematic way of tracking the frequencies of repeated disruptive behaviors, it is important to understand that no objective measuring of behaviors existed prior to 1980. In 1978, The Child Welfare Service found that disruptions in a child's foster placement affected the child's structure, added stress on foster parents, and incurred additional costs to prepare, find, and offer additional placement home changes. Ward, Holmes & Soper (2008) found that children who incurred failed placements also experienced difficulties in finding new foster home placements. Failed children placements averaged exponentially up to six times after the first failed foster home placement (Ward et al., 2008). The child welfare systems relied on evidenced-based programs (EBP) in order to reduce the frequencies of repeated placement disruptions, one of which was called Keeping Foster Parents Trained and Supported, or KEEP. This intervention emerged as a social learning modality focused on parent training (Hurlburt, Chamberlain, Degarmo, Zhang, & Price, 2010). As the MTFC program was emerging, the PDR was developed as an objective measuring of the effectiveness of the program (Chamberlain & Reid, 1987).

Child and Welfare Services were interested in predicting disruptive behavior among foster children hoping that foster home changes would decrease. The MTFC program offered the PDR as a way to track disruptive behavior through distinguishing characteristics in conjunction with children diagnosed with symptomologies that reflected a clinical basis as found in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (Hurburt et al., 2010).

The PDR is a 30-item index that measures behavior problems. Parents are to telephone a trained interviewer daily with tally sheet of questions pertaining to the child's behavior. Total scores on any given day can range from 0 to 30 (Chamberlain & Reid, 1987). To complement the prediction of disruptive behavior and parent training interventions, a 12-month, large-scale randomized trial was performed to ascertain disruptive behaviors and their prediction. The participants in this study included the San Diego County Department of Health and Human Services (DHHS), the Oregon Social Learning Center (OSLC) and the Child and Adolescent Services Research Center (CASRC). The study included 700 foster children and families consisting of a control group of 341 and a non-control group of 359 foster children (Hurburt et al., 2010). The reported baseline of an alpha reliability of .84 and .83 as well as obtaining the effectiveness of the PDR with assessing risk for disruption in placement among foster children reflects the prediction specificity of .62 and a sensitivity of a .57.

Summary and Conclusions

The purpose of this study examined the effectiveness of utilizing individualized and rehabilitative therapies based on children placed in foster homes. The chapter examined the previous research methodologies of the target population. The literature addressed how MTFC and ITFC programs contribute to decreasing disruptive behaviors. What is not yet complete is whether individual services are any more effective compared to a rehabilitative approach in reducing disruptive behaviors. In conclusion, this study identified that spending additional resources on a high-risk population is clinically

significant and worthwhile. In addition, the second component of this research may suggest alternative presentations of the treatments based on gender.

Chapter 3: Research Method

Introduction

The purpose of the study was to determine if the addition of rehabilitative services for foster children already receiving individual therapy makes a significant difference in reducing disruptive behavior. An additional inquiry was presented seeking to determine if there were gender differences in decreasing disruptive behavior depending on the types of services received. This chapter reviews the research design and methodology of this study.

Research Design and Rationale

The independent variable in this study was the treatment modality used on foster care children. There are three levels to this variable:

1. no treatment, or the baseline,
2. individual therapy, and
3. rehabilitative strategies added to the individual therapy.

The dependent variable was the measurement of disruptive behavior of the foster child as rated by the foster care parent on PDR.

The basis of this study was a quasi-experimental quantitative longitudinal pre and post- test design that draws from an archival dataset collected between 2013 and the present (Cook & Campbell, 1979). The data were provided by a foster family social service agency based in California. Staffers at this agency have specially designed programs intended to provide appropriate interventions for foster children exhibiting disruptive behaviors. They used the PDR for the last 3 years as a monitoring tool.

However, no structured analysis of their data exists. This study's design included the testing of the hypotheses by investigating disruptive behaviors treated using individual mental health therapy and the addition of rehabilitative therapy in foster care placement.

The primary research question was, Does the addition of rehabilitative strategies to individual therapy reduce disruptive behaviors in both males and females?

$H_1$1: There is a significant reduction of disruptive behaviors with the inclusion of rehabilitative services and individual therapy compared to individual therapy alone.

$H_0$1: There is no difference in reduction of disruptive behaviors with the inclusion of rehabilitative services and individual therapy when compared to individual therapy alone.

$H_1$2: There are differences in disruptive behavior depending on the gender of the individual undergoing therapy alone.

$H_0$2: There are no differences with disruptive behaviors depending on gender undergoing individual therapy alone.

$H_1$3: There are differences in disruptive behavior depending on the gender of the individual undergoing rehabilitative services.

$H_0$3: There are no differences with disruptive behaviors depending on gender undergoing rehabilitative therapy.

I derived Hypothesis $H_1$1 from Westermark, Hannson, and Olsson's (2011) discussion of foster care children with severe disruptive/antisocial behavior. Westermark, Hannson, and Olsson found that these children demonstrated decreased disruptive behavior from individual therapy coinciding with specialized rehabilitative services, such

as TBS or Wrap Around services. This study is similar in nature to disruptive behaviors treated through individual specialized therapy and rehabilitative therapy/services within a two-tiered design.

Hypotheses 2 through 3 stem from previous research on gender and disruptive behaviors. Three studies have demonstrated gender differences in the MTFC program (see Kerr et al., 2014; Rhoades et al., 2013; Schaeffer et al., 2006). The subjects of the study displayed decreased disruptive behavior after participating in individual and/or school based rehabilitative services. These studies were similar in nature with treating behaviors through cognitive based therapies within a two-tiered design and signifying differences among gender.

Methodology

Participants and Sample Size

The determination of the sample size was based on previous studies showing similar effect sizes. Ellis et al. (2012) and Larsson et al. (2009) studied 124 children and 127 respectively. The G-power type of analysis in the Ellis et al., study used an effect size of .597 when using repeated measures ANOVA from time at intake and scores 4-6 months later, with a population of 124 and 93 respectively. Larsson et al. found an effect size of -0.29-2.24 using 127 subjects. The Larsson et al. average effect size was 0.67. In this study, an effect size of 0.6, with power set at .95, resulted in a sample size requirement of 32. This study used archival data of 160 subjects. Based on my decision to analyze data by using a repeated measures ANOVA, I determined that a sample of 160 was adequate for the study.

Instrumentation

This study relied on data from the PDR to measure disruptive behavior of foster care youth (see Appendix A). Nadler and Roberts (2013) discussed how the purpose of the PDR was originally constructed in 1975 specifically for parents to observe children's 33 targeted behaviors. Patterson et al. (1975) were able to construct a behavior tally that simplified the task of having parents observe misbehaviors at no additional cost imposed on parents or a special training requirement. This method was determined to have test-retest reliability "which was represented in two previously presented projects that were independently performed through a test-retest reliability ($.60 < r < .82$)" (Nadler & Roberts, 2013, p. 106). The PDR proved to be sensitive to ascertain the effects of treatments on juveniles as evidenced by results in 9 of the 22 studies (Nadler & Roberts, 2013).

An archival database of PDRs collected on a daily basis from foster parents was used for this study. The data were collected to determine the efficacy of treatment with foster care children. A local foster family agency, a California-based, state-funded agency worked with clinical and foster children adopted the PDR. PDR numbers are summated throughout the 2-week period being observed. Thus, the range of possible scores from the PDR over 2 weeks could be from 0-392 incidents of disruptive behavior. During the 6 months of treatment, the breakdown obtained data comprised of three periods of measure: (a) 2 weeks at the beginning of individual therapy treatment, (b) 2 weeks of data at the 3 month mark after individual therapy and the first 2 weeks of data

after rehabilitation treatment started, and (c) 2 weeks of data at the 3 month mark into the rehabilitation program.

1. PDRs were collected daily from foster parents throughout the duration of the program, resulting in a behavioral data range of 0-392.

2. PDR data were used to compute two additional secondary measures from the totality of the measures first, post individual therapy minus pre individual therapy equals therapeutic change (TC), and post rehab/therapy minus pre rehabilitation program equals rehabilitative change (RC). The purpose of these measures is to establish progress measurements to determine if the therapy and treatment are providing the desired effects on the subjects. Without these data points, there is no way to conclusively determine if there is any benefit from treatment. This means the agency cannot determine if resources are being properly allocated for the benefit of the foster children and families it serves. On the other hand, if the agency determines that the treatment program is effective, then additional resources can be allocated and additional funding sources can be explored.

Analysis of Data

In order to address Hypothesis 1, a one-way repeated measures ANOVA will be used. Constructing the one-way Repeated Measures ANOVA method involves three levels of independent variables representing the treatment phase of for the clients, and are categorized as:

1. baseline – the first time point, sums of count with interval measurement,

2. individual therapy /Pre Rehab – the second time point, a sums of count with interval measurement,

3. postrehab – the third time point with sums of count.

The repeated measures ANOVA provides several advantages. It is compatible with smaller sample sizes, it allows for the ability to examine mean scores over three time points and most importantly, it examines the same subjects repeatedly, thus reducing unwanted changes in the data (Campbell & Stanley, 1966).

The one-way repeated measures ANOVA compares all three measures of the DV simultaneously to an overall mean, and evaluates if any of the three estimates are different. If one of the three is different, then the analysis is significant. Because prior comparisons were not specified, post hoc analyses can be conducted to further evaluate which of the three times differ from the others, if any (Hochberg, 1988). Repeated measures ANOVA is superior to other paired comparisons in that it controls the familywise error rate, and also uses a more accurate estimate of error variance, increasing the likelihood of finding significant differences if they are present in the data (Hochberg, 1988).

For Hypotheses H2 and H3 involving gender differences between therapy and again between rehabilitation, a 2x2 repeated measure ANOVA was utilized. Therapeutic Change (TC) and Rehabilitative Change (RC) were two new secondary variables created. Therapeutic Change (TC) was calculated by subtracting the Post Therapy/Pre-rehab scores from the Baseline scores. Rehabilitative Change (RC) was calculated by subtracting the Post Rehab scores from the Post Therapy/Pre-rehab scores. These two variables, TC and RC then become the categories under which each gender is assessed.

Here, the same advantages of the repeated measures ANOVA are present as noted above, but the error is also adjusted for differences between the two genders.

Threats to Validity

The design, a longitudinal quasi-experimental study, drew from observational data obtained from foster parents who may have a number of threats to validity, which include:

1) Variability of foster parents (FP) collecting the data, were influenced by extraneous variables such as how their day was, inconsistent times of day when data was collected, or FP forgetting to collect throughout the daily/weekly tallies. As a result, the data could lack reliability (Cook & Campbell 1979).
2) The inability to change the order of presentation of the alternate treatments, i.e. individual therapy then rehabilitative therapy versus rehabilitative therapy then individual therapy (Cook & Campbell 1979) is also a threat to validity. This alteration allowed the researcher to make causal statements whether the particular therapies were effective or not, rather than for unidentified reasons, for example time in treatment alone. Unfortunately, the treatment order is specific to the course during the MTFC/ITFC program (i.e. baseline-individual therapy-rehabilitative therapies) and thus the alternating of therapies was neither conducted nor able to be investigated.
3) A control group was not incorporated. This study compared the foster youth's disruptive behavior through a series of time while the foster youth participated

in the specific treatment modality. The baseline of behavior was reported at the beginning of treatment and was then compared as the client continued their specific modes of treatment.

In addition to the threats to validity from the data, there is the potential for a threat to validity due to the use of the repeated measures ANOVA itself. According to Huck and McLean (1975), the use of the repeated measures ANOVA can produce misleading results if the tests are not carefully executed. It is important to remember that the data used for this study contains data considered to be pretest data – that is, data collected at the beginning of the study. While this data represents a starting point, the fact remains that these scores will remain unaffected by the treatment program (Huck & McLean, 1975). This also means that the second and third sets of data may not be as effective at demonstrating the changes expected resulting in an inflated possibility of Type II error (Huck & McLean, 1975). In spite of these acknowledged threats to validity, the repeated measures ANOVA was used because of the stability in the participant's data – more specifically, because the study was designed to observe changes in behavior of individuals over time and because the repeated measures ANOVA works well with smaller sample sizes (Campbell & Stanley, 1966).

Ethical Procedures

The data contained no identifiable information, which could lead to the discovery of names, conditions, or other confidential information of the participants. Identification of the participants was neither necessary nor required for this study. The association between this study and the foster family agency were strictly used for the purposes of this

study with no other associations, either actual or implied, acted to influence the outcome. The data were used for the sole purpose of conducting this study and were not disclosed for any reason except where required by law. The chain of custody of the data began with foster family agency and ended with the author of the study. No other individuals were involved in the handling or interpretation of the information deemed necessary for the academic review of the study. The data was deleted and/or destroyed after the study was completed.

Summary

The goal of this study determined that additional rehabilitative therapies, in conjunction with individual therapy, significantly reduced disruptive behaviors in foster youth who have undergone multiple home placements. The positive behavioral outcomes based on studies performed by Chamberlain (2003) showed that the incorporation of additional therapy resources did encourage foster youth to graduate into society as positive adult role models and save money that would have been used for additional higher level of foster care placements, thus redirecting monies to be used for other youth services. The decreases in disruptive behaviors of foster youth who have exhausted their allotted foster home placement were explored in this study. Failure of foster youth decreasing these disruptive behaviors at this level of foster care placement resulted in possible juvenile justice system interventions.

In this chapter, the methodology of the target population, its setting, sample, and unique population used to assess the research design were examined. The participants included 160 foster children that were evaluated using the PDR and 28 disruptive

behaviors were examined. These behaviors were logged and tallied by foster parents on the PDR. The disruptive behavior archival data were recorded and summated during the initial two weeks they entered the program and individual therapy; two weeks before rehabilitative/individual therapy services began, and then three months later. A repeated measures ANOVA was conducted to determine potential differences of disruptive behavior between foster youth receiving therapy/rehabilitation versus the same children earlier in individual therapy alone. Gender differences were examined between individual therapy changes and rehabilitative/therapy changes on the PDR. These results were documented in Chapter 4 in detail.

Chapter 4: Results

Introduction

In this chapter, I will be providing an overview of the results of my study. I begin with my results of predictors of treatment outcomes of individual therapies and rehabilitative services for foster children displaying disruptive behavior before, during, and after individual therapy and rehabilitative service treatments. I proceed to an overview of gender differences in the individual therapy services alone. Finally, I summarize with an overview of gender differences in therapy coupled with rehabilitative services and treatments.

The theoretical framework of this study borrowed from Bronfenbrenner's (2005) bioecological systems theory in which a child develops within a system of relationships that, in turn, form the foundation of his or her environment. The systems of the Bronfenbrenner theory include: culture, school, community, family, and religion and work in conjunction with the child's biology and immediate family or community to direct development (Bronfenbrenner, 2005). A repeated measures ANOVA method was used to examine whether mean differences across three time waves were statistically significant for the all hypotheses and to eliminate possible error measures of within subject variability. This chapter includes my research questions and hypothesis, a description of the sample I used, a discussion of my assumptions, and a summary of the chapter.

Data Collection

The data were collected from an archival dataset. The data were collected between 2013 and 2016 by a foster family social service agency in California. The agency developed a program specifically designed to provide appropriate intervention for high-risk foster children. PDRs from the last 3 years were the behavioral monitoring tool documenting 28 disruptive behaviors of foster children residing in foster homes. Foster parents observed, logged, and tallied disruptive behaviors on the PDR on a daily basis; completed forms were submitted to the foster family agency on a weekly basis.

The archival dataset represented 160 randomly selected foster children – 80 male and 80 female. The foster family agency provided only the recorded data, a number coding system, and the gender of each child. No other data were provided. The expected age range for the ITFC program is 8 to 16 years of age; however, the data provided did not include the ages of the children. Therefore, the age dataset could not be determined.

Results

The dataset was a record of each child's disruptive behavior recorded on the PDR across three time points. For the hypothesis tests, four variables were used to test mean differences across three waves of PDR measure. For the one-way repeated measures ANOVA method, three levels of independent variables representing the treatment were assigned. These were (a) *Baseline* (the first time point, a scale variable with interval measurement), (b) *Post Therapy/Pre Rehab* (the second time point, a scale variable with interval measurement), (c) *Post Rehab* (the third time point, a scale variable with interval

measurement). Also, I include one independent variable, *gender*, a nominal variable with two levels of male and female. The dataset's total sample size was (n) = 160.

A repeated measures ANOVA method was used to determine whether mean differences across three time periods are statistically significant for the first hypothesis. A one-way repeated measures ANOVA method was used to determine whether mean differences across three time periods between gender groups were statistically significant. The study tested for the three assumptions of the repeated measures ANOVA test:

1. approximation to normal distribution of the dependent variable at three time points,
2. equality of variance of the dependent variable at both time points, and
3. assumption of correlation between the dependent variables.

Approximation to Normal Distribution

The histograms in Figure 1 represent the data from the three time points measured by the PDR to graphically demonstrate whether the data assumed a normal distribution.

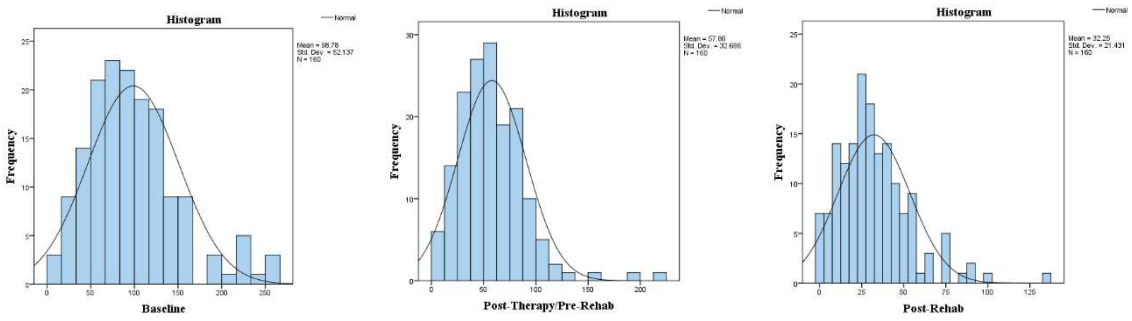

Figure 1. Histogram with fitted curves of PDR measure at three time points.

At *Baseline*, the graph reveals an asymmetric distribution as evidence of the right-skewed tail of the curve, thus indicating a positive skewed distribution. Both the *Post-Therapy/Pre-Rehab* and *Post-Rehab* measures showed similar asymmetric distribution as

depicted by right-skewed tails and thus upon visual inspection of the histograms, the three measures of PDR did not assume normal distribution.

Examination of both boxplots in Figure 2 shows the presence of influential outliers detected in each of the three time points of *PDR* measure. Specifically, more outlier cases were detected at greater than the top 25% of *PDR* scores in both time points at *Baseline* and *Post-Rehab* than at the second time point of *Post-Therapy/Pre-Rehab*.

Outlier Detection

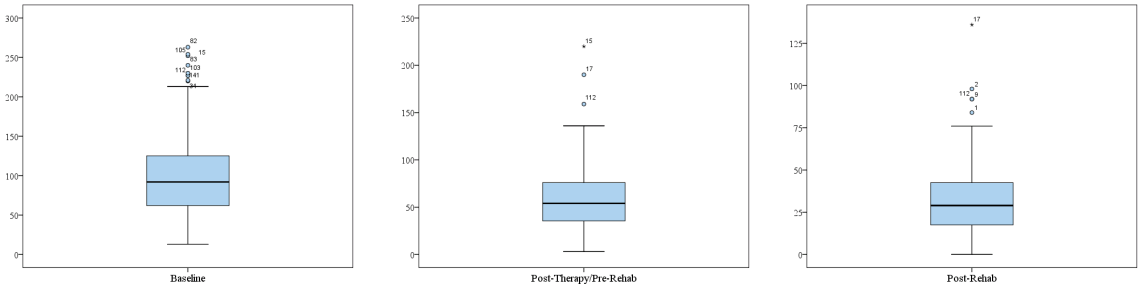

Figure 2. Boxplots of PDR measure at three time points.

Table 1 shows the three dependent measures as they were observed at three time points. It also includes summary statistics and skewness/kurtosis estimations.

Table 1

Case Summaries: PDR measure at three time points

	Baseline	Post-Therapy/Pre-Rehab	Post-Rehab
N	160	160	160
Mean	98.780	57.860	32.250
Std. Deviation	52.137	32.686	21.431
Skewness	0.997	1.403	1.322
Std. Error of Skewness	0.192	0.192	0.192
Skewness Ratio	**5.193**	**7.307**	**6.885**
Kurtosis	1.092	4.50	3.341
Std. Error of Kurtosis	0.381	0.381	0.381
Kurtosis Ratio	**2.866**	**11.811**	**8.769**

At time point 1 in *Baseline*, the variable showed a positive skewed distribution (*skewness statistic* = 0.997) with positive kurtosis Values (*kurtosis statistic* = 1.092), which indicated evidence of leptokurtic or peaked distribution characteristics. At the second time point in *Post-Therapy/Pre-Rehab*, the variable showed a positive skewed distribution (*skewness statistic* = 1.403). Its kurtosis had severe positive kurtosis value (*kurtosis statistic* = 4.50) indicating evidence of leptokurtic or distribution with peaked distribution characteristics. At the third time point in *Post-Rehab*, the variable showed similar positive skewed distribution (*skewness statistic* = 1.322). Its kurtosis had a severe positive kurtosis value (*kurtosis statistic* = 3.341) indicated as evidence of leptokurtic or with distribution with peaked distribution characteristics. Warner (2013) suggested that skewness and kurtosis values of -1 to +1 are considered ideal, whereas values ranging from -2 to +2 are considered acceptable for psychometric purposes. Thus, according to

Warner, outcome variables in *Post-Therapy/Pre-Rehab* and *Post-Rehab* had kurtosis issues which distorted the distribution of the two measures away from approximating normality.

Another test for approximation to normality is the *skewness and kurtosis ratio test* (Z_s = *skewness or kurtosis ÷ standard error)* and is used to assess the distribution of the outcome variable. In this case, *Z* values should fall between ±1.96 and ±2.0 for normal distributions at *p=.05* (Hair, Black, Babin, Anderson & Tatham, 2010). Table 1 shows that the skewness ratio value at *Baseline* (5.193) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was not assumed. Similarly, the skewness ratio value at *Post-Therapy/Pre-Rehab* (7.307) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was not assumed. The skewness ratio value at *Post-Rehab* (6.885) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was not assumed. In terms of kurtosis, the kurtosis ratio value at *Baseline* (2.866) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was violated. Similarly, the kurtosis ratio value at *Post-Therapy/Pre-Rehab* (11.811) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was not violated. Lastly, kurtosis ratio value at *Post-Rehab* (8.769) exceeded the ±1.96 or ±2.0 threshold and thus normal distribution was not assumed. Overall, when utilizing the skewness/kurtosis ratio test, the three outcomes failed to approximate normality.

The last test to diagnose whether normality was assumed involved the *Shapiro-Wilk's test of normality* shown in Table 2.

Table 2

Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Baseline	0.934	160	0.000
Post-Theraphy/Pre-Rehab	0.919	160	0.000
Post-Rehab	0.920	160	0.000

a. Lilliefors Significance Correction

The *Baseline* estimates had a significant statistical value greater than the .05 threshold, *S-W*(160) = 0.341, $p < .05$, which indicated the approximation to normality was violated or the current data was normally distributed. At *Post-Therapy/Pre-Rehab*, *S-W*(160) = 0.919, $p < .05$, indicated the approximation to normality was violated or the current data was normally distributed. Lastly, at *Post- Rehab*, *S-W*(160) = 0.920, $p < .05$, indicated the approximation to normality was violated or the current data was normally distributed. Hair et al. (2010) suggested that the .01 threshold can be used for sample size less than 30. For the *Shapiro-Wilk's test of normality*, a *S-W* value of 1.0 indicated the given data was perfectly normal in distribution (Tabachnick & Fidell, 2012).

In conclusion, the three dependent variables failed to approximate normal distribution based upon the inferences from visual inspection using the histogram, boxplots, the results from the skewness/kurtosis ratio test, and the *Shapiro-Wilk's test of normality*. As a result of the normality violation of the outcome variables, a data transformation strategy was used to remedy the normality issues.

Osborne (2002) explained that data transformations are a commonly used statistical tool for improving the normality of variables. Osborne further added that a significant violation of the assumption of normality can seriously increase the chances of

committing either a Type-I error (a decision to reject the Null hypothesis when it is actually true) or a Type-II error (a decision to accept the Null hypothesis when it is actually false). Tabachnick and Fidell (2007) suggested that data transformations were recommended as a remedy for outliers, and for failure of normality, linearity, and homogeneity.

Field (2009), Hair et al. (2010), and Tabachnick and Fidell (2007) recommended using natural log, log base 10, square root, or the inverse data transformation where the logarithm of a set of numbers squashes the extreme tails of the distribution to reduce the skewness. Of the four data transformation strategies considered, the square root transformation offered the most reduction on both observed skewness and kurtosis. Figure 3 depicts the results of square root transformation along with normality tests and graphical representations.

Approximation to Normal Distribution: After Square Root Transformation

Examination of Figure 3 reveals that the square root data transformation strategy did provide remedial support from the severity of positive skewness that was apparent before the data transformation.

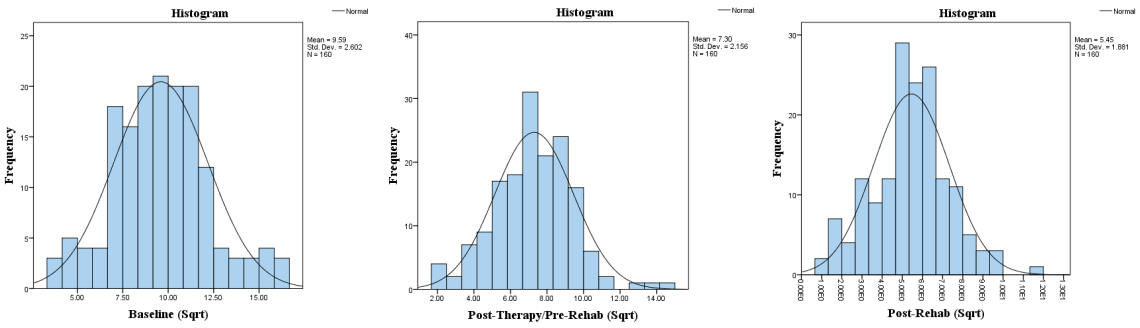

Figure 3. Histogram with fitted curves of PDR measure with transformed variables.

After the data transformation, each of the dependent measures of *PDR* appeared to display a more symmetric distribution as evidenced by equal proportion of both sides of the tail.

Outlier Detection: After Square Root Transformation

The three boxplots in Figure 4 reveal the presence of influential outliers after data transformation significantly reduced the number of cases above the top 25% of the *PDR* scores and thus the square root transformation did provide a remedial adjustment.

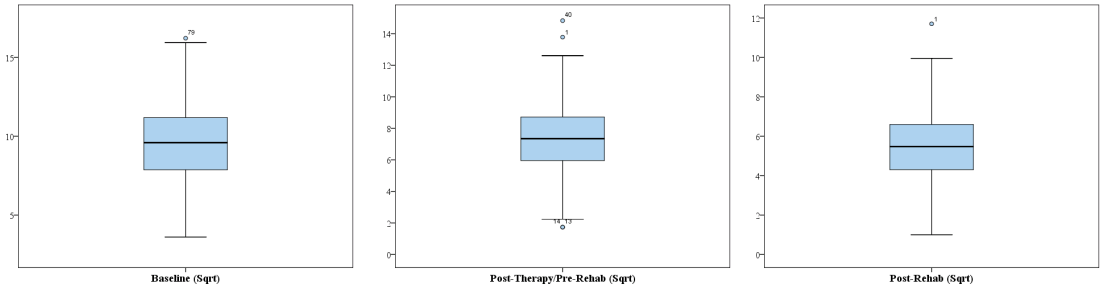

Figure 4. Boxplots of PDR measure at three time points.

Table 3 shows the three transformed dependent measures taken at three time points along with summary statistics and skewness/kurtosis estimations.

Table 3.

Case Summaries

	Baseline (Sqrt)	Post-Therapy/Pre-Rehab (Sqrt)	Post-Rehab (Sqrt)
N	160	160	160
Mean	9.594	7.297	5.453
Std. Deviation	2.602	2.156	1.881
Skewness	0.195	0.056	0.062
Std. Error of Skewness	0.192	0.192	0.192
Skewness Ratio	1.016	0.292	0.323
Kurtosis	0.155	0.996	0.419
Std. Error of Kurtosis	0.381	0.381	0.381
Kurtosis Ratio	0.407	**2.614**	1.100

At *Baseline*, the variable showed a slight positive skew distribution (*skewness statistic* = 0.195). Its positive kurtosis values (*kurtosis statistic* = 0.407) indicated that leptokurtic or with peaked distribution characteristics was minimal. At second time point in *Post-Therapy/Pre-Rehab*, the variable showed a very slight positive skew distribution (*skewness statistic* = 0.056). Its positive kurtosis values (*kurtosis statistic* = 0.996) indicated evidence of leptokurtic or with distribution with peaked distribution characteristics. At third time point in *Post-Rehab*, the variable showed a slight positive skew distribution (*skewness statistic* = 0.062). Its positive kurtosis values (*kurtosis statistic* = 0.419) indicated evidence of leptokurtic or with distribution with peaked distribution characteristics. Using Warner (2013) convention of ± 1.0 as an ideal threshold, overall approximation to normal distribution after the square root transformation was assumed.

Utilizing the *skewness and kurtosis ratio test* formula convention seen in Table 3 and the ±1.96 or ±2.0 threshold values, dependent measures in *Baseline* and *Post-Rehab*

were within the acceptable standards of both the skewness and kurtosis ratio tests. Dependent measure in Post-Therapy/Pre-Rehab satisfied the skewness ratio standards but failed the kurtosis ratio test since the value (2.614) exceeded the ±2.0 threshold value. Overall the three transformed variables exhibited an adequate change in meeting the normality assumption.

Using both the conventions suggested by Hair et al. (2010) utilizing a $p > .05$ threshold and the *S-W* comparison value closer to 1.0 indicates the given data is perfectly normal in distribution (Tabachnick & Fidell, 2012). With these criteria, the study accepted that all three transformed variables passed the *Shapiro-Wilk's Test of Normality*, *Baseline*, *S-W*(160) = 0.986, $p = .109$; *Post-Therapy/Pre-Rehab*, *S-W*(160) = 0.985, $p = .081$, and *Post-Rehab*, *S-W*(160) = 0.990, $p = .296$ as shown in Table 4.

Table 4.
Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Baseline (Sqrt)	0.986	160	0.109
Post-Theraphy/Pre-Rehab (Sqrt)	0.985	160	0.081
Post-Rehab (Sqrt)	0.990	160	0.296

In conclusion, the three transformed variables did exhibit an adequate measure of normality given the sufficient results presented above and thus, approximation to normal distribution was achieved.

Equality of Variance Test

There were two types of equality of variance test conducted and these included the homogeneity test for between subjects (gender factor) and the test of sphericity for the

three dependent measures observed at three time points. Table 5, the Levene's Test of Homogeneity of Variances, shows an important non-significance value of $p > .05$, suggesting that the error variance between the two independent groups (gender) were approximately equal.

Table 5.
Levene's Test of Equality of Error Variances

Non-transformed	F	df1	df2	Sig.
Baseline	1.418	1	158	0.236
Post-Theraphy/Pre-Rehab	0.383	1	158	0.537
Post-Rehab	8.057	1	158	**0.005**

Transformed	F	df1	df2	Sig.
Baseline (Sqrt)	0.090	1	158	0.765
Post-Theraphy/Pre-Rehab (Sqrt)	1.000	1	158	0.319
Post-Rehab (Sqrt)	5.630	1	158	0.019

With the non-transformed variables, *Baseline* at time point one was not significant, $F(1,158) = 1.418$, $p = .236$, and *Post-Therapy/Pre-Rehab* at time point two was also not significant, $F(1,158) = 0.383$, $p = .537$. Both results indicated that the variances between the gender groups were approximately equal. A significant result for *Post-Rehab* at the third time point, $F(1,158) = 8.057$, $p = .005$ was detected indicating that the variation of scores at the third measure was not equal between gender groups. For the transformed variables, *Baseline* at time point one was not significant, $F(1,158) = 0.090$, $p = .765$, and *Post-Therapy/Pre-Rehab* at time point two was also not significant, $F(1,158) = 1.00$, $p = .319$. This indicated that the variances between the gender groups were approximately equal. Finally, a significant result for *Post-Rehab* at the third time point, $F(1,158) = 5.630$, $p = .019$ suggested that equality of variances was not equal between gender.

However, Tabachnick and Fidell (2007) recommended that conservative alpha (α) values of .01 and .001 are common to estimate the homogeneity between independent groups and thus, the Levene's result using the transformed variables provided adequate estimates and met the assumption of equality variance between gender groups.

The test of sphericity for the three dependent measures assumed that the variation of scores between the three measures were equally the same. *Mauchly's Test of Sphericity* assumes that the variances between dependent variables observed more than once are approximately equal (Field 2009). If sphericity was not assumed, Field recommended using both the Greenhouse-Geisser and Huynh-Feldt to provide diagnostic estimates of sphericity if violated.

The *Mauchly's Test of Sphericity* revealed that the variances between the dependent measures were neither equal nor significant, $W(2) = .721$, $p < .001$ and thus violated the assumption of sphericity. The *Greenhouse-Geisser* estimates were used to determine the within-subjects effect of the hypothesized model.

Assumption of Correlation

The third assumption of the one-way repeated measures ANOVA tested whether there was a meaningful association between the dependent variables. Table 6 depicts the correlation matrix of the PDR measure observed across three time points using the non-transformed and transformed variables.

Table 6.

Correlations: Non-transformed

		Baseline	Post-Theraphy/Pre-Rehab	Post-Rehab
Baseline	Pearson Correlation	1	.671**	.487**
	Sig. (2-tailed)		0.000	0.000
	N	160	160	160
Post-Theraphy/Pre-Rehab	Pearson Correlation	.671**	1	.746**
	Sig. (2-tailed)	0.000		0.000
	N	160	160	160
Post-Rehab	Pearson Correlation	.487**	.746**	1
	Sig. (2-tailed)	0.000	0.000	
	N	160	160	160

Correlations: Transformed

		Baseline (Sqrt)	Post-Theraphy/Pre-Rehab (Sqrt)	Post-Rehab (Sqrt)
Baseline (Sqrt)	Pearson Correlation	1	.733**	.585**
	Sig. (2-tailed)		0.000	0.000
	N	160	160	160
Post-Theraphy/Pre-Rehab (Sqrt)	Pearson Correlation	.733**	1	.804**
	Sig. (2-tailed)	0.000		0.000
	N	160	160	160
Post-Rehab (Sqrt)	Pearson Correlation	.585**	.804**	1
	Sig. (2-tailed)	0.000	0.000	
	N	160	160	160

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

Each of the bivariate correlations from Table 6 among the three time points had significant and positive correlations; *Therapeutic change* $TC_{non\text{-}transformed}$ (Time 1 and Time

2), $r(158) = .671$, $p < .001$, and *Therapeutic change* $TC_{transformed}$ (Time 1 and Time 2), $r(158) = .733$, $p < .001$; *Therapeutic change* $RC_{non\text{-}transformed}$ (Time 2 and Time 3), $r(158) = .487$, $p < .001$, and *Therapeutic change* $RC_{transformed}$ (Time 2 and Time 3), $r(158) = .585$, $p < .001$. Figure 5 shows the scatterplot matrix for each of the three dependent measures to provide an illustration of the observed correlation or linearity between the three *PDR* measures. Overall, the assumption of correlation among the three time points was assumed.

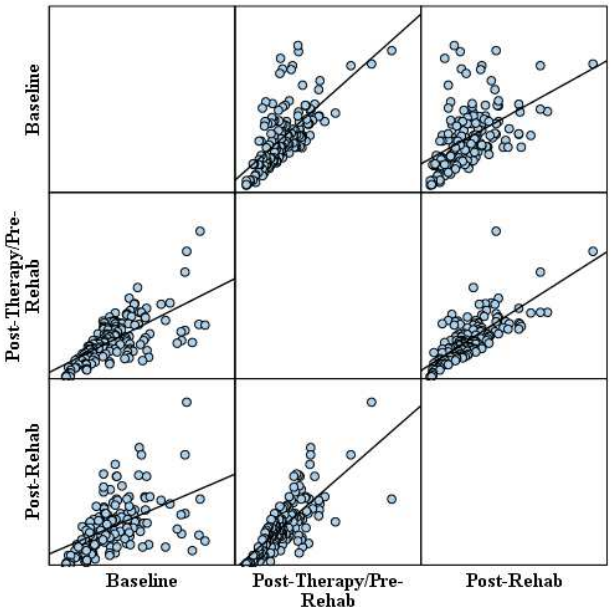

Figure 5.Scatterplot matrix of dependent measures

In conclusion, after testing for the three assumptions, both the repeated measures *ANOVA* and one-way repeated measures *ANOVA* were the appropriate methods to test the study's hypotheses and to indicate whether the mean differences across the three time points were statistically significant while accounting for gender effects.

Statistical Summaries

Figure 6 shows that the mean averages of the PDR measures (therapeutic change) from Time Point 1 at *Baseline* (*M* = 98.78, *SD* = 52.137) to Time Point 2 at *Post-Therapy/Pre-Rehab* (*M* = 57.86, *SD* = 32.686) indicated a 41% decrease in PDR symptoms between the two time periods. The mean PDR scores (rehabilitative change) from Time Point 2 at *Post-Therapy/Pre-Rehab* (*M* = 57.86, *SD* = 32.686) to Time Point 3 at *Post-Rehab* (*M* = 32.25, *SD* = 21.431) indicated a 44% decrease in PDR symptoms between the two time periods. Similarly, a measure of dispersions revealed a negative trend as evidence of the decreasing standard deviation from Time Point 1 through Time Point 3.

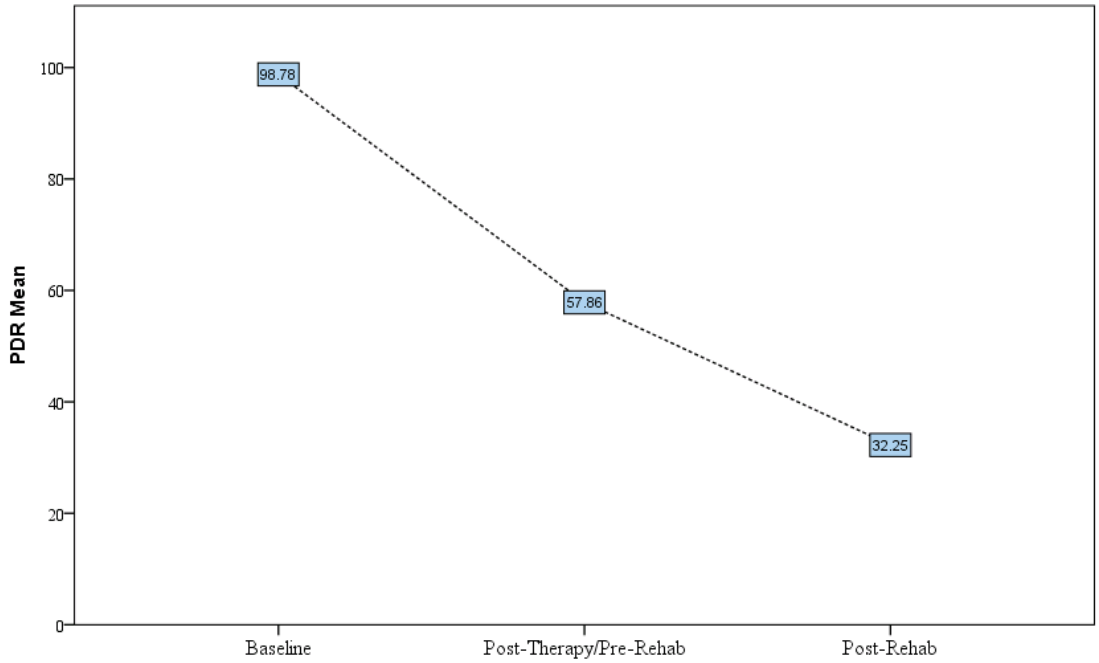

Figure 6: Line-plot of PDR measures

Table 7.

Descriptive Statistics: PDR measure

		Baseline	Post-Therapy/Pre-Rehab	Post-Rehab
N	Valid	160	160	160
	Missing	0	0	0
Mean		98.78	57.86	32.25
Median		92	54	29
Std. Deviation		52.137	32.686	21.431
Minimum		13	3	0
Maximum		263	220	136
Percentiles	25th	62	35.25	17.25
	50th	92	54	29
	75th	125.5	76	42.75

Table 8 shows that gender factor beginning with the male group had a mean PDR score at *Baseline*, $M = 104.10$, and a standard deviation, $SD = 55.139$ while the female group had a mean PDR score at *Baseline*, $M = 93.45$, and a standard deviation, $SD = 48.716$.

Table 8.

Descriptive Statistics

	Gender	Mean	Std. Deviation	N
Baseline	Male	104.10	55.139	80
	Female	93.45	48.716	80
	Total	98.78	52.137	160
Post-Theraphy/Pre-Rehab	Male	57.43	29.104	80
	Female	58.29	36.094	80
	Total	57.86	32.686	160
Post-Rehab	Male	30.46	16.531	80
	Female	34.04	25.390	80
	Total	32.25	21.431	160

The male group mean PDR score at *Post-Therapy/Pre-Rehab*, $M = 57.43$, and a standard deviation, $SD = 29.104$ while the female group had a mean PDR score at *Post-Therapy/Pre-Rehab*, $M = 58.29$, and a standard deviation, $SD = 36.094$. Lastly, the male group mean PDR score at *Post-Rehab*, $M = 30.46$, and a standard deviation, $SD = 16.531$ while the female group had a mean *PDR* score at *Post-Rehab*, $M = 34.04$, and a standard deviation, $SD = 21.431$.

For Hypothesis 1, a repeated measures ANOVA was conducted to test the mean differences of PDR measures across three time points and revealed that the multivariate test was significant, *Wilk's Lambda* = .202, $F(158) = 312.134$, $p < .001$, indicated mean differences across the three time points of PDR measure were statistically significant. The tests of within-subjects effects ANOVA seen in Table 9 revealed that the within-subjects main effect of the PDR measure for the non-transformed model was significant.

Table 9.

Tests of Within-Subjects Effects

Non-transformed Model

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
PDR	Greenhouse-Geisser	360298.654	1.353	266279.682	265.483	0.000	0.625	1.00
	Huynh-Feldt	360298.654	1.361	264809.923	265.483	0.000	0.625	1.00
Error(PDR)	Greenhouse-Geisser	215786.013	215.14	1003.001				
	Huynh-Feldt	215786.013	216.334	997.465				
	Lower-bound	215786.013	159	1357.145				

Tests of Within-Subjects Effects

Transformed Model

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
PDR	Greenhouse-Geisser	1377.575	1.553	886.873	437.897	0.000	0.734	1.00
	Huynh-Feldt	1377.575	1.566	879.801	437.897	0.000	0.734	1.00
Error(PDR)	Greenhouse-Geisser	500.196	246.974	2.025				
	Huynh-Feldt	500.196	248.959	2.009				

Greenhouse-Geisser $F(1.353, 215.14) = 265.483$, $p < .001$ with *partial ETA squared*, $\eta^2 = 0.63$, indicated a very large effect size, in other words, the degree of the magnitude of

the mean differences of the outcome variable across the three time points were sufficiently large. A post-hoc Power analysis revealed a robust 100% detection rate in avoidance of Type II statistical error. Similarly, the tests of *within-subjects effects* ANOVA seen in Table 9 revealed that the within-subjects main effect of the PDR measure for the transformed model was significant. *Greenhouse-Geisser F*(1.553, 246.974) = 437.897, $p < .001$ with *partial ETA squared*, $\eta^2 = 0.73$, indicated a very large effect size. In other words, the degree of the magnitude of the mean differences of the outcome variable across the three time points was sufficiently large. A post-hoc Power analysis revealed a robust 100% detection rate in avoidance of Type II statistical error.

Table 10 shows a pairwise comparison that was conducted using the Bonferroni adjustment. Based on this test, a pairwise comparison revealed that the PDR score taken at *Post-Therapy/Pre-Rehab* ($M = 57.86$, $SD = 32.686$), was about 40.92 times lower on PDR average scores than the *Baseline* ($M = 98.78$, $SD = 52.137$) and was statistically significant, $p < .001$, 95% C.I. [33.51, 48.33] with a very-large effect size, *Cohen's D* = 0.94. The transformed model also confirmed the significant mean differences detected between *Post-Therapy/Pre-Rehab* and *Baseline* time points, $p < .001$, 95% C.I. [1.956, 2.639] with a very-large effect size, *Cohen's D* = 0.96. Additionally, post-hoc group comparison revealed that the PDR score taken at *Post-Rehab* ($M = 32.25$, $SD = 21.431$), was about 25.61 times lower on PDR average scores than the *Post-Therapy/Pre-Rehab* ($M = 57.86$, $SD = 32.686$) and is statistically significant, $p < .001$, 95% C.I. [25.41, 29.81] with a very-large effect size, *Cohen's D* = 0.93. The transformed model also confirmed the significant mean differences detected between *Post-Rehab* and *Post-*

Therapy/Pre-Rehab, $p < .001$, 95% C.I. [1.60, 2.09] with a very-large effect size, *Cohen's* $D = 0.91$.

Table 10.

Non-trasnfomed Model

(I) PDR	(J) PDR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Baseline	Post-Therapy/Pre-Rehab	40.919*	3.063	0.000	33.508	48.329
	Post-Rehab	66.525*	3.613	0.000	57.784	75.266
Post-Therapy/Pre-Rehab	Baseline	-40.919*	3.063	0.000	-48.329	-33.508
	Post-Rehab	25.606*	1.736	0.000	21.406	29.807

Pairwise Comparisons

Transformed Model

(I) PDR	(J) PDR	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Baseline	Post-Therapy/Pre-Rehab	2.298*	0.141	0.000	1.956	2.639
	Post-Rehab	4.141*	0.169	0.000	3.732	4.551
Post-Therapy/Pre-Rehab	Baseline	-2.298*	0.141	0.000	-2.639	-1.956
	Post-Rehab	1.844*	0.102	0.000	1.597	2.09

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

As a result, the study rejected the null hypothesis because there was sufficient evidence to support the study's assumption, which claims that there were reduction of disruptive behaviors and the mean differences were statistically significant across the three time points. Hypothesis one shows there are clear differences between the three time points.

Hypothesis 2 and 3 focused solely on gender effects on secondary variables. As stated previously in Chapter 3, the analysis was conducted to test the gender differences of PDR measures on a secondary variable called Therapeutic Change (TC). Therapeutic

Change is defined as the Baseline score minus Post-Therapy/Pre-Rehab score. A 2x2 ANOVA was conducted. Since the initial hypotheses involved secondary variables and lacked interaction predictions, however, only the between subjects gender effects were reported.

Table 11 revealed that the between-subjects main effect of *gender* for the non-transformed model was not significant. $F(1, 158) = 0.630$, $p = .429$ with *partial ETA squared*, $\eta^2 = 0.004$, indicated a nonexistent effect size. In other words, the degree of the magnitude of the gender mean differences on therapeutic change was tenuous.

Table 11.

Tests of Between-Subjects Effects

Non-Transformed Model

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
Intercept	1962667.878	1	1962667.878	644.91	0.000	0.803	1.00
Gender	1915.903	1	1915.903	0.630	0.429	0.004	0.124
Error	480844.719	158	3043.321				

Transformed Model

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
Intercept	22823.696	1	22823.696	2322.145	0.000	0.936	1.00
Gender	8.436	1	8.436	0.858	0.356	0.005	0.151
Error	1552.937	158	9.829				

a. Computed using alpha = .05

A post-hoc Power analysis revealed a sub-standard 12.4% detection rate in avoidance of Type II statistical error. Similarly, the between-subjects main effect of *gender* for the transformed model was not significant. $F(1, 158) = 0.858$, $p = .356$ with *partial ETA squared*, $\eta^2 = 0.005$, indicated a nonexistent effect size. In other words, the degree of the magnitude of the gender mean differences on therapeutic change was tenuous. A post-hoc Power analysis revealed a sub-standard 15.1% detection rate in avoidance of Type II statistical error.

Therefore, the study failed to reject the null hypothesis because there was not enough sufficient evidence to support the study's assumption, which claims that there were statistical gender differences on therapeutic change. However, the null criterion was approached with caution since a sub-standard rate of detecting Type-II error (False Null) was detected.

An analysis was conducted to test the gender differences of PDR measures on a secondary variable called Rehabilitative Change (RC). Rehabilitative Change is defined as Post Therapy/Pre-rehab scores minus Post-Therapy/Pre-Rehab scores. The tests of between-subjects effects ANOVA shown in Table 12 revealed that the between-subjects main effect of gender for the non-transformed model was not significant.

Table 12.

Tests of Between-Subjects Effects

Non-Transformed Model

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
Intercept	649530.903	1	649530.903	502.652	0.000	0.761	1.00
Gender	393.828	1	393.828	0.305	0.582	0.002	0.085
Error	204168.769	158	1292.207				

Transformed Model

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[a]
Intercept	13003.653	1	13003.653	1757.3	0.000	0.918	1.00
Gender	0.004	1	0.004	0.001	0.982	0.000	0.050
Error	1169.167	158	7.4				

a. Computed using alpha = .05

$F(1, 158) = 0.305$, $p = .582$ with *partial ETA squared*, $\eta^2 = 0.002$, indicated a nonexistent effect size. In other words, the degree of the magnitude of the gender mean differences on rehabilitative change was tenuous. A post-hoc Power analysis revealed a

sub-standard 8.5% detection rate in avoidance of Type II statistical error. Similarly, the between-subjects main effect of gender for the transformed model was not significant. $F(1, 158) = 0.001$, $p = .982$ with *partial ETA squared*, $\eta^2 = 0.000$, indicated a nonexistent effect size, in other words, the degree of the magnitude of the gender mean differences on rehabilitative change was tenuous. A post-hoc Power analysis revealed a sub-standard 5.0% detection rate in avoidance of Type II statistical error.

In hypothesis three, the study failed to reject the null hypothesis because there was not enough sufficient evidence to support the study's assumption, which claimed that there were statistical gender differences on rehabilitative change. However, the null criterion was approached with caution since a sub-standard rate of detecting Type-II error (False Null) was detected.

Summary

The study was designed to investigate whether the three mean scores of PDR measures were statistically different from each other given the types of conditions of the study design. The results indicated that three PDR scores observed at three time points were significantly different from each other as well as, significant when accounting for gender effects. On average, the PDR mean score of *Post-Rehab* was significantly lower than the *Post-Therapy/Pre-Rehab* and at the *Baseline*. In addition, the PDR mean score at *Post-Therapy/Pre-Rehab* was significantly lower than the PDR scores at *Baseline* level. The study also determined that there were no gender effects. However, post-hoc statistical power indicated that sub-standard rates of detecting Type-II error (False Null) was observed and thus, caution in the inferences of the null criterion is necessary.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to identify the effects of individual therapy and rehabilitative strategies on disruptive behaviors of foster care children. Specifically, it was designed to determine if children, living in ITFC homes, who have undergone individual therapy alone versus the addition of rehabilitative services decrease the expression of disruptive behavior; and if there are gender differences among these treatments for children. Disruptive behavior was measured by using the PDR (Chamberlain & Reid, 1987; Fisher & Chamberlain, 2000), which looks at 28 disruptive behaviors.

PDRs of disruptive behaviors among foster children were obtained to evaluate whether before and after treatments make a difference and to determine if gender components could discriminate between successful and unsuccessful treatment outcomes. The participants included 160 foster children who were evaluated using the PDR. These behaviors were logged and tallied by foster parents on the PDR daily. The disruptive behavior archival data were recorded and summated during three 2-week periods: the time the subjects entered individual therapy, before rehabilitative services began, and then 3 months later. Gender differences were examined between individual therapy changes and rehabilitative/therapy changes on the PDR using a 2 x 2 Repeated Measures ANOVA.

In this chapter, I discuss the findings of a repeated measure ANOVA I conducted to determine potential differences in disruptive behavior between foster youth receiving

additional rehabilitation versus the same children earlier in individual therapy alone. Additionally, the limitations of this study, implications for social change, recommendations, and implications for further study are discussed.

Interpretations of the Findings

Three primary research questions were analyzed in this study:

R1: Is there is a reduction in disruptive behaviors with the inclusion of rehabilitative services and individual therapy when compared to individual therapy alone?

R2: Are there are differences with disruptive behaviors depending on the gender undergoing individual therapy alone?

R3: Are there are differences in disruptive behavior depending on gender undergoing rehabilitative services?

Based on these research questions, the human ecology theory proposed by Bronfenbrenner (2005) set the foundation for understanding how human beings can change. The environment influences such change among human beings, according to Bronfenbrenner. Bio ecological model systems can assist with changing a human being's developmental life (Bronfenbrenner, 2005).

In this study, three measures of disruptive behaviors were used: baseline (2 weeks of data at beginning of therapy), post therapy (2 weeks of data after 3 months of therapy at beginning of rehabilitative services), and post rehabilitation (2 weeks of data after 3 months of rehabilitative services). Secondary variables were then created and compared.

These consisted of baseline minus post therapy and post therapy minus post rehabilitative services.

The research confirmed what previous literature suggested: that the addition of rehabilitative therapy produced significant reduction in disruptive behavior. Test results after adjusting for normality of the dependent variables indicate a statistically significant reduction in the number of incidents of disruptive behavior. The extent of this decline signified that posttherapy/prerehab scores were, on average; approximately 40 times lower than PDRs recorded prior to individual therapy. Such dramatic reductions in PDR scores indicate that even therapy alone produces very acceptable improvement in behavioral issues (Chamberlain, 2003).

Test results after adjusting for normality of the dependent variable indicate an additional statistically significant reduction in the number of incidents of disruptive behavior. The extent of the decline in postrehab scores was, on average; approximately 25 times lower than those of the posttherapy/prerehab. These significant reductions where both therapy and rehab are combined demonstrate the effectiveness of both therapy and rehabilitative services. These results more than suggest the promise of minimalizing disruptive behavior, they confirm that children who receive both therapy and rehab services will be better-behaved and will adjust to changes in life.

Hypothesis I expanded on a study by Westermark, Hannson, and Olssons (2011), in which the authors discussed treatment of disruptive behavior using a two-tiered treatment program but did not compare the effects of therapy to those of therapy and rehabilitative services. In separate studies, Chor et al. (2012), Larsson el al. (2009) and

Fisher et al. (2009) discussed coupling of therapy and rehabilitative services but did not expand on the significance of the outcomes. That is not to say that those previous studies were faulty or incomplete. The purpose of this study was merely to compliment them by confirming that the use of the two-tiered approach does, in fact, work.

In the case of the Hypothesis 2 posited in this study, the research was intended to determine if there were any significant differences in the diminishing of disruptive behavior among subjects receiving therapy alone based on gender (Conrad et al., 2014; Schaffer et al., 2006). The test of between-subjects effects ANOVA determined that there are no statistically significant differences in the outcome of the results based on gender. Therefore, the null hypothesis cannot be rejected since sufficient evidence was not provided to support the claim that there were differences based on gender.

The outcome of the test of gender differences contradicted the theory of reviewed literature, which indicated that significant differences would be observed when examining the data in terms of the test subjects' gender (Conrad et al., 2014; Schaffer et al., 2006). This does not mean that these differences, if taken from larger sample sizes or under different circumstances would not become apparent, merely that this study failed to support that claim. Such failure should not be construed to indicate flaws in this study. Additionally, post-hoc statistical power revealed sub-standard rates of detecting Type-II error where the Null hypothesis is accepted as true when it is not.

In the case of the third hypothesis posited in this study, the research sought to determine if there were any significant differences in the diminishing of disruptive behavior among subjects receiving both therapy and rehabilitative services based on

gender. The test of between-subjects effects ANOVA determined that there is no statistically significant difference in the outcome of the results based on gender. Therefore, the null hypothesis cannot be rejected since sufficient evidence was not provided support the claim that there is a difference based on gender.

This is in contrast to such studies as Schaffer et al. (2006) and Conrad et al. (2014) which theorized that statistically significant differences based on the gender could be expected. This contradiction merely indicates that this study did not support claims made by others. Such studies as the one by Schaffer et al. (2006) involved almost ten times the number subjects as this study. Schaffer et al. also recorded data over a longer period in a longitudinal study. It is stipulated that differences in the duration of a study affected the statistical outcome of that study. This should, not be construed in any way to mean this study is flawed. It must also be noted that post-hoc statistical power revealed sub-standard rates of detecting Type-II error where the Null hypothesis is accepted as true when it is not.

Limitations of the Study

In designing the study, a number of limitations were considered. First limitation is the data used in the study was archival in nature. One of the biggest concerns with using archival data is that it is referred to as a selective deposit. This means that the data are not truly random, much like when a newspaper publishes a letter to the editor, those letters that get published may not accurately reflect the views of all of those who submitted letters. Additionally, archival data may not be completely accurate given that people make mistakes when entering data into the archive or the data selected from the

archive, while being confidential, may still reflect a bias or mistake on the part of the archiver. Finally, the researcher using archival data was not in contact with the subjects or variables that may play a part in formulating the data. Such errors in collecting the data includes the researcher did not formulate a specific research question and therefore, the data may not be exactly what is deemed necessary for the study (Gauvain & Huard, 1999).

Secondly, foster parents completed the PDR or the collection of observational data. Parents did not undergo formal training thus leaving open observational bias. Leather, Spielfogel, Gleeson and Rolock (2012) found that there were many possible extenuating circumstances/distractions that influenced behavioral observations as follows; personal issues for either the child or the foster parent; varying times of day when data was recorded; failure to record observations.

Third, the inability to alternate treatments – (i.e. individual therapy then rehabilitative therapy versus rehabilitative therapy then individual therapy) is a possible flaw. The altering of therapy and rehabilitative services order –increases the confidence and causality of the actual treatment being responsible for effect changes (Cook & Campbell, 1979). In this specific study, the treatment order is specific to the course during the MTFC/ITFC program (i.e. baseline-individual therapy-rehabilitative therapies) and thus the alternating of therapies was not conducted nor able to be investigated.

The design of the archival study did not incorporate a control group. This study compared the foster youth's disruptive behavior through time, while the foster youth participated in the specific treatment modality. The reporting of the baseline of behavior

occurred at the beginning of treatment and then compared to subsequent intervals as the client continued their specific modes of treatment. The lack of a control group reduced the ability to gain reliable baseline data by which to compare the treatments.

Other limitations included the inability to select children at random for the study. The foster care agency provided the PDRs of 160 foster care youths for analysis. This meant there was no way to determine the stability of the children in the study. Disruptive behavior and its effect on successful placement reveal the necessity of preemptive intervention into child behavioral issues. Children who are at risk for placement disruptions due to preventative disruptive behavior are more easily identified through the effective and low-cost PDR. Child welfare improvement is attainable through distribution of methods and interventions (Fisher, Stoolmiller, Mannering, Takahashi & Chamberlain, 2011). There was no way to tell if the child remained in the program for its defined duration or left then came back, if the child had moved from one foster home to another and record-keeping methods were different or a demonstrated deviant behavior was considered worth of recording in one home and not in another. The identification of the children represented on the PDR was coded only by an identification number specific to the child and their gender. The lack of obtaining the child's/youth's age may have proved to be beneficial in determining the types of specific therapeutic treatment modality, cognitive abilities, FP training specific to age i.e. child versus teenager.

Recommendations

Results from this study suggest several future directions. While it is almost impossible ethically to have a control group, what may be beneficial is to find other foster

family agencies that might not being using treatments, and make comparisons against those that do, thus increasing causality determinations (American Psychological Association, 2010). Further research can utilize various networks of foster family agencies, as a way to obtain additional sources of data, to obtain different data point from different agencies with different protocols and a combination of obtaining references, resources and ideas. We can discover different ways to treat myriad foster children who are in the foster care system (Chamberlain, 2003; Chamberlain & Reid, 1998; MTFC).

An ability to change the temporal administration of treatments, such as an AB, BA model (i.e. Therapy then rehabilitation versus rehabilitation then therapy) should be incorporated in the future to determine the effectiveness of each treatment modality (Cook & Campbell, 1979). When changing the temporal administration, the program would determine if treatment would be better suited to begin with therapy and end with rehabilitation or if beginning with rehabilitation and then implementing therapy would produce better outcomes for the child. The effectiveness of the modalities would then be reviewed, both individually and together, to determine a more economical way to treat the high-risk population (Cook & Campbell, 1979).

More formalized training opportunities are recommended for parents to complete the PDR and provide accompanying video of various key behaviors. Scientist should develop more formalized parent training to increase the consistency and reliability of their measurements, thus enhancing future studies and results. According to operation definitions set forth by Chamberlain and Reid (1987), extensive and proper training for the parents to identify behaviors will further enhance the validity of future findings.

Another future direction for study is a one-year follow up. The child and the caregiver (whether a foster or biological parent) and the therapist meet on or about the anniversary date of completion of the therapy/rehab program to confirm if those target behaviors as identified by the PDR are still reduced. This kind of follow up will confirm if the disruptive behavior patterns are diminishing. This would further support the significant, but effective expenditure of monies on this population (Westermark et al., 2011).

Future research should also consider the age of the children in the study. Age definitely contributes to a child's development (Beilin, 1992). Piaget theorized that thinking and intellectual growth are an augmentation of biological development which include consumption and adaptation of one's environment (Beilin, 1992). Children will acclimate to their surroundings as their mental capabilities allow. It is unreasonable to expect a 4-year-old to understand his situation in the same way a 14-year-old. However, a question to consider for future research is "do younger children respond better to these levels of interventions versus older children?" This recommendation can help determine how future researchers can review behavioral data by age to include the child's mental development.

Ethnicity of the foster child and foster parents are a point to consider in future research. Taking into account cultural diversity effects, for example: the dynamic between a white foster parent and a black foster child and vice versa may be different from the dynamic between foster parents and children of the same race. Margaret Mead emphasized the contrasting behavioral patterns between people of different ethnicities

(Mead, 1947). Depending on the differences, this could allow foster care agencies to develop training programs to assist foster parents not rearing children of the same race.

Socioeconomic status may play a role in future research. Children from lower socio-economic standings tend to academically progress more slowly as opposed to children who are from affluent circumstances (Sturge-Apple, Jones & Suor, 2017). Schools and communities of lower socio-economic standing often lack financial resources that properly support academic progress among these students (Sturge-Apple et al., 2017). Future consideration for research can be obtained before a child is considered a candidate for the MTFC program, so that researchers can determine if appropriate government funding offering parenting/family packages to biological parents with teaching them the basic parental foundations (i.e. MTFC training) in lieu of additional monies for programs instituting foster care parents and utilizing their homes.

Future research could be conducted to determine if the severity, length of exposure and/or nature of previous trauma exposure will affect treating a young child with a traumatic experience differently than treating an older child with the same traumatic experience. Foster parents must be properly trained to appropriately observe different disruptive behaviors by seeing varying videos allocated for each 28 disruptive behaviors, as noted on the PDR. Consideration of using a trained a mental health professional is best practice to determine the disruptive behaviors as opposed to the untrained eye of a foster parent, which can be influenced by emotions or parental aptitude (i.e. parent is tired, upset, sad, etc.) (Chamberlain, 2003).

The findings of this study did not support gender differences in disruptive behavior and additional research influencing disruptive behavior among males versus females deserves more attention with respect to the aforementioned future research considerations. This is opposed to previous research where Conrad et al. (2014) reported that more interventions should complement the increase of juvenile recidivism among female offenders. Comparatively, Brack et al. (2012) were previously enlisted by a national service provider and then contracted with child service providers throughout the nation to obtain treatment(s) specifically geared towards foster care females. Thomson, Towl and Centifanti (2016) reported that rates among males continue to lead in incarcerations. The U.S. Department of Justice reported an increase of incarcerations among females have increased in the following areas; probation (16.5%), jail (30%) and prison (21%) with an average of a 2% increase in female imprisonment (Thomson et al., 2016). Since the results of this study did not support gender differences, it is possible to include factors determining which issues lacked in this study. This could include the aforementioned recommendation concerns based on the archival data that did not include exact dates the data were obtained or the ages of the foster child on the agency's archival data. The dates could determine if these foster children's biological parents, who were previously incarcerated, were unable to properly parent and care for their child, thus thrusting their children to be placed in foster care homes. The increase of female incarcerations, which reduces initial bonding between a child and its mother, can offer awareness among the increase of female incarcerations and how it affects displacements

among children, especially females, who are apt to get pregnant and repeat the cycle (Thomson et al., 2016).

In addition to consideration for the gender of the child, the gender of the foster parent may be the source of additional review. Such a question as, "Does a single female foster parent prefer one gender over another and do her preconceived notions, or biases, toward the preferred or non-preferred gender reflect parental obstacles that could affect the treatment outcome?" might reveal areas of concern that could have an influence on the treatment. This can offer additional insight whether a foster parent's choice of gender among foster care placements are easier to accommodate based on foster parent gender biases.

The failure of this study is to determine the effects of therapy based on gender were, by no means intended as a confirmation of the irrelevance of gender differences among children. The lack of information may have performed a disservice toward the lack of sensitivity reflecting the gender differences of this study. Foster children require much more attention and sensitivity in working with their issues. The fact of the matter is that there are two genders among children and they respond to other stimuli differently, so why wouldn't they respond differently to therapy and rehabilitation differently? This study merely failed to observe those differences. Perhaps the lack of measurable results within this study will prompt someone to ask "why?" in the future. Suggestions as to what to do to observe those differences were included in this section. There is no reason why mental health professionals cannot observe children, find those differences and from those answers derive ways of helping not only these children but others as well.

Implications

Children living in the foster care system are often under additional stress from living with a family with whom they are unfamiliar, and in most cases, even attending different schools, with different teachers and classmates (Chamberlain, 2003). With these additional stressors, disruptive behavior can become more than just pushing boundaries and testing limits (Benson, 2006). Some foster children often require more attention in the form of rehabilitative services (Chamberlain). Chamberlain discussed that foster children receive treatment-based services such as traditional means like individual therapy to reduce disruptive behavior. Chamberlain also noted that foster children typically do not receive rehabilitative services, unless required (O'Toole and Kirkpatrick (2007). The potential positive social change implication of this study is to use different rehabilitative/therapeutic strategies to decrease disruptive behavior among foster children. This study attempted to examined that the combination of individual therapy and rehabilitative can lead to a decrease of disruptive behaviors.

ITFC and MTFC program models have shown a cost-effective advantage, as well as, have demonstrated savings to taxpayers versus incurred costs by the criminal justice system, with a reported savings of $5,815 per youth and $11,760 per youth savings in reduced crime victim costs (Fisher & Chamberlain, 2000). Throughout the years, treatment strategies have demonstrated effective success with severely emotionally disturbed, antisocial children and adolescents, who would have otherwise been placed in alternative congregate care settings (Fisher & Chamberlain). This study, however, attempted to demonstrate whether the additive effects of rehabilitative therapies in

conjunction with individual therapy components have shown to be clinically significant in reducing problematic behaviors. Anticipated results have suggested the following: (a) further research of additional treatment modalities that may also be effective; (b) alternative avenues for expenditures of funds in areas other than those currently used, or (c) continued research of the modalities that are already being used. The significance of this study hopes to effect positive social change through the decrease of disruptive behavior among children and adolescents living in the foster care system, as well as lead programs to a more cost effective treatment strategies with foster care boys and girls effecting overall positive social changes both socially and economically.

This study potentially offers positive social change through the demonstration of decreasing disruptive behavior in foster children and transforming their lives in positive directions within the foster care system. A good example, Kerr et al. (2014) began a nine-year study of random sample of delinquent adolescent females between the ages of 12 and 17 years of age with a juvenile justice system record and concluded with a two- year follow-up of these females who are considered more likely to experience suicidal ideations and adult depression. These results indicated that delinquent females who received MTFC treatment exhibited a reduction in delinquent behavior. These delinquent females had a reduction in relationships with "deviant peers", as well as improved school attendance, completion of homework and decrease of pregnancy (Kerr et al,. 2014, p. 686). The positive effects of female children/adolescents using the MTFC programs have been decreased problem behavior and thereby deterred disruptive prosocial behaviors with future domino episodes that may lead to risk factors such as depression

and suicidal ideations (Kerr et al., 2014). Lastly, it is hoped that this information will benefit program supervisors, foster care social workers, and clinicians in envisaging recidivism (Kazdin & Durbin, 2012).

Conclusion

This research study was able to find significance in predicting treatment outcomes with disruptive behavior among foster children living in foster homes, using the PDR and applying to variables of individual therapy and rehabilitative services and comparing treatments before, during and after treatments. The addition of predicting gender differences among these treatment variables outcomes indicates significance and further study. The implications that this research study may have on future research was the data collected by foster parents was limited. There are thousands of possible predictor variables in how to obtain accurate observation of behavior, versus a foster parent's own interpretation of behavior and a more accurate dataset that could have been evaluated. Additionally, more research questions could be developed using the data that was collected. Thousands of other skilled and knowledgeable mental health professionals and researchers could add a tremendous amount of insight into similar future research.

While this research study was conducted on a smaller scale, the significance and the implications, as well as the literature review and findings do have the potential to make an impact in finding a recipe for decreasing disruptive behavior among children living within foster care homes. The future may present treatment on the abuse of children and how it affects behavior transcending into adulthood. It can also establish an

advocacy for empowering and educating the professionals who work with this population in the future.

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IRB APPROVAL NUMBER: 03-02-17-0019605

Appendix A: Parent Daily Report (PDR)

Foster Parent Daily Report Behavior Log

Week of: _____ Foster Home:_____

Child : _____ Gender: **M / F**

Behaviors	Sun	Mon	Tues	Wed	Thurs.	Fri	Sat.
Arguing							
Defiance							
Tantrum							
Destructiveness							
Hitting							
School Problems							
Complaining							
Sadness							
Crying							
Whining							
Yelling							
Teasing							
Stealing							
Swearing							
Lying							
Irritability							
Nervous							
Hyperactivity							
Short attention span							
Repetitive questions							
Interrupting							
Irresponsibility							
Sleep problems							
Pant wetting							
Bedwetting							
Encopresis							
Sexual behavior							
Animal Cruelty							
Daily Grade							
Points/Bucks Earned							
Timeouts							
Total Behaviors							
Interviewer							
Respondent							

Notes: **** 1=not stressful 2= stressful.