

# Neighbor To Family: Supporting Sibling Groups in Foster Care

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Neighbor To Family (NTF) is a foster care program that prepares sibling groups for permanency and the future through the use of professional caregivers; extensive training and support for caregivers; a team-based approach which includes family, kin, and caregivers as equal partners; and intentional and aggressive outreach to biological parents and extended family. This article reports on the first controlled study, using a propensity analysis, that compares outcomes for 417 children receiving the NTF service with a matched group of 417 children receiving traditional foster care services. Matching demonstrated significant improvement in placement within county, placement with siblings, stability of placement, time to permanent placement, and cost of care for the children receiving NTF services compared to the children who received other forms of foster care. The studies are discussed in terms of their implications for foster care practice and the use of propensity matching to expand research opportunities.

## IMPLICATIONS FOR PRACTICE

- Professional foster caregivers can effectively place sibling groups together based on documented outcomes and cost reduction.
- A matching strategy provides precision with random assignment which allows research questions to be answered from current data sources.

Developing effective approaches for meeting the foster care needs of sibling groups is a major national and state child welfare challenge. It is estimated that 67% of children in foster care have another sibling in care (Child Welfare Information Gateway, 2013). Sibling relationships are emotionally powerful and critically important not only in childhood, but also over the course of a lifetime. For children in foster care the most stable and important relationship in their lives is often with their siblings. Wulczyn and Zimmerman (2005) and Albert and King (2008) showed that 57% of siblings were placed with no siblings at entry, and 41% were never placed with a sibling during time in care. The Fostering Connections to Success and Increasing Adoption Act of 2008 was the first national legislation to require states to make reasonable efforts to maintain sibling connections. While placing siblings together became a national priority in 2008, data on sibling placements are not included in the federal child welfare reporting requirements and are not reported by most state child welfare agencies. Some local and state level evaluations show progress in placing siblings together, but even more show little change, and the overall placement of siblings together appears to have not improved (Casey Family Programs National Center for Resource Family Support, 2003). While there are occasionally good reasons for separating

siblings, almost two thirds of sibling groups are separated due to administrative reasons or lack of foster homes willing to take the whole sibling group (Leathers, 2005). Why is placing siblings together so important? First, the research shows much better outcomes for children placed with siblings. Second, it can significantly reduce the level of trauma experienced by children removed from their homes.

Almost all studies show shorter times to reunification when siblings are placed together (Albert & King, 2008; Leathers, 2005; Webster, Shlonsky, Shaw, & Brookhart, 2005), and multiple studies show increased behavior problems, mental health challenges, and school failure for siblings placed apart (Hegar & Rosenthal, 2009, 2011; Tarren-Sweeney & Hazell, 2005).

A primary goal of child welfare services is to reduce trauma for children. Trauma is related to violence and neglect and is psychologically experienced as a loss of control. When a child feels traumatized by abuse or neglect, the accompanying loss of control is a central feature of the trauma (Gustavsson & MacEachron, 2010). Removing a child from an unsafe environment is one approach to reducing trauma. On the other hand, taking children away from their homes results in multiple additional sources of trauma and uncontrollable losses. These children lose their parents and, if they move out of their neighborhoods, often lose their churches, schools, friends, and health care professionals. Each move while in foster care is another form of trauma and instability. The loss of connection with siblings may be the most traumatic event (Zimmerman, 1982). Placing siblings together can reduce this trauma. For children entering foster care, siblings can serve to buffer each other against the worst effects of the trauma of abuse, neglect, and removal, and the usually strong bonds between siblings may become protective factors supporting emotional health (Gustavsson & MacEachron, 2010; Zimmerman, 1982).

In 1994, the Jane Addams Hull House in Chicago, under the direction of Gordon Johnson, developed a professional foster caregiver model called neighbor to neighbor (NTN). In the NTN model, foster caregivers were recruited from the local communities specifically to serve sibling groups. They were trained and established as paid professionals with benefits and insurance. The NTN model was implemented as the Neighbor To Family program (NTF) in 1997, and through formative and outcome evaluations, the process has been continuously improved and a theory of change and corresponding fidelity tools developed (Johnson & Rast, 2014). NTF services were established in four counties in central Georgia, staff were trained, and the system was tested for fidelity. Then the next 417 children who entered NTF services from July 1, 2005, through June 30, 2006, were enrolled in a program evaluation. This evaluation addressed formative evaluation, outcomes, and the fidelity of the NTF process (Vonk, 2007) for these children. The evaluation demonstrated good fidelity of the process to the new NTF model (Vonk, 2007). Unfortunately, the evaluation was not able to provide any comparisons to a control group and covered less than a year for the majority of the children.

A primary interest in doing evaluation research is determining the relative effectiveness of a treatment process. Random assignment to treatment is used to ensure that participation in the intervention is the only differentiating factor between the group that is receiving the treatment and the group that is not. In human services this is often not possible. Fortunately, considerable progress has been made in understanding the effectiveness of interventions on core outcomes through rigorous use of nonexperimental evaluation methods (D'Agostino, 1998; Posner, Ash, Freund, & Schwartz, 2001).

First defined by Rosenbaum and Rubin (1983), a propensity score is the likelihood that an individual will be in the treatment group based on a set of observed covariates. To use propensity scores as a method of minimizing confounding and bias, each individual in the control and treatment group is assigned a propensity score based on these covariates. These values are then used to match treated individuals to controls, instead of matching on the entire set of covariates. This method of analysis has been implemented in many fields to replace randomization (Heinrich, Maffioli, & Vázquez, 2010). Children in child welfare custody vary according to age, race, sex, level of emotional and behavioral challenges, reasons for removal, home and community location, and number of siblings in care. Each of these characteristics might impact outcomes, and thus differences in these characteristics could confound results. Rather than attempting to match all of

the characteristics, the propensity score calculates a single score based on all of the variables, thus providing much better matching of individuals.

There are two main assumptions in the successful use of propensity score matching (Rosenbaum & Rubin, 1983). The first is that the covariates that are included in the calculation of the propensity score are the only confounding variables that make the control and treatment groups different. The second is that there is sufficient overlap in the characteristics of the control and treatment groups such that adequate matches can be made. To determine the advantage of using propensity score analysis over logistic regression or other methods, the mean difference in the covariates and the difference between the mean propensity scores for each group are compared (Heinrich et al., 2010). After obtaining propensity scores, there are generally three methods of matching that are performed with these scores, as suggested by Rosenbaum and Rubin (1983): nearest neighbor matching, radius matching using a caliper, and Mahalanobis matching (Guo & Fraser, 2010, Heinrich et al., 2010). Nearest neighbor matching was used in this study. The small sample size of one of the counties would have made radius matching using a caliper less effective, and the straightforward implementation of nearest neighbor matching was desirable for this study. The idea behind matching after obtaining propensity scores is to compare a control and treatment individual with similar likelihoods of being in the treatment group (Guo & Fraser, 2010). Propensity score matching is often used as a statistical technique for observational data, and it has been used in studies ranging from special education services (Morgan, Frisco, Farkas, & Hibell, 2010) to cardiovascular events in patients given aspirin (Charlot et al., 2011) to substance abuse and child welfare clients (Guo, Barth, & Gibbons, 2006). Propensity score is seen as a viable alternative to randomization and a solid statistical method of reducing the effect of confounding variables (D'Agostino & D'Agostino, 2007).

To do a more complete study, data were gathered from the Georgia Department of Family and Children Services (DFCS) database in December 2010 for these 417 children and for a matched comparison group of 417 children who were served in the traditional foster care system during the same time period. The groups were compared on outcomes for permanency, stability, safety, and cost over a 3-year period. The specific research questions for this study were the following:

1. Does the NTF model of sibling foster care produce significantly different results from other foster care through a matched pairs design?
2. Does propensity matching provide a good alternative to randomly assigned control groups when the latter is not feasible?

## Methods

### **Dates, Location, and Participants**

The study included 834 children with siblings who entered the foster care system in four counties of Georgia (Clayton, Gwinnett, DeKalb, and Fulton) from July 1, 2005, through June 30, 2006. Of these children, 417 received traditional child welfare foster care services and 417 received foster care services through NTF. Data were obtained to assess the outcomes for each child for 3 years or for 6 months following permanent placement (whichever came first). Children who reentered the child welfare system during the 3 years continued in the study. The data analysis was done separately for each county because child welfare and NTF are administered separately in each county. The population for the NTF group was all children who entered NTF services during this time and consisted of 32 children in Clayton, 40 in Gwinnett, 166 in DeKalb, and 179 in Fulton counties. DFCS staff identified potential candidates for NTF placement. If there was an opening in the program, the sibling group was placed with NTF. Due to the need for rapid placement when openings were not available, children were placed in other foster care placements. The number of children who met the basic criteria for serving as a comparison group (i.e., part of a sibling group, from the same county, not in higher levels of residential care, and who entered services during the same time period) was 287 for Clayton, 548 for DeKalb, 694 for Fulton, and 383 for Gwinnett. Thus the pool of potential control children was much larger than the selected matching group in each county. In addition to the matching criteria of county, being part of a sibling group, and date of entering foster care, five other factors were used in identifying the comparison groups: race, sex, age, level of care for the child, and primary reason for foster care placement.

### **Treatment Condition**

NTF has several significant differences from traditional child welfare foster care services. First, NTF caregivers are employees of the agency with health insurance and benefits, are recruited to serve sibling groups, and receive a minimum of 50 hours of training per year in addition to the training required for foster care licensure. Second, NTF caregivers receive regular group supervision, individually scheduled evaluations, at least weekly on-site support, monthly support groups, respite care, and additional professional services for the children and their parents through the NTF team. Third, NTF caregivers are full partners in the process of assessment, and developing and implementing the care plans. They receive all information on the children they are working with, help develop the plans of service, and implement large parts of the plan. Fourth,

NTF caregivers engage in aggressive outreach to and coparenting with parents, extended family, or future adoptive parents. Vonk (2007) measured fidelity to these processes shortly after the end of the enrollment period and found good fidelity to the NTF model.

### **Comparison Measures**

Data were gathered for each of the 834 children on a series of measures that reflect safety, stability, permanency, and cost. The data were gathered from the Georgia DFCS database and DFCS documents in the NTF files. The data included a coded unique identifier for each child, the county in which the child was placed, the county of origin, the child's date of birth, gender, the date and reason the child was removed from his or her home, the county of initial placement, the number of siblings, the number of siblings placed in the same home with the child, the date of permanent placement (and discharge), the type of placement at discharge, the number of placements while in care, the types of placements and number of days in each, the number of allegations and substantiated abuse allegations while in care, and the number of allegations and substantiated abuse for the 6 months after discharge during the evaluation period. From these data, four stability outcomes (*placement with one sibling, placement with all siblings, placement within the county of origin, and moves while in care*), two safety outcomes (*substantiated abuse and neglect while in care and for the 6 months after care*), three permanency and placement outcomes (*length of time in placement, level of placement while in care, and type of permanent placement*), and overall costs for foster care and related casework were compared.

### **Statistical Analysis**

Propensity scores were obtained for each individual following the method as described by Rosenbaum and Rubin (1983) using Stata<sup>®</sup> 12. A propensity score was calculated for each individual and represents the likelihood that the individual was in the treatment group based on a set of covariates. The mean propensity scores between groups were compared to check if either group was predicted to fall in the treatment group more often. In order to control for the variance between the control and NTF groups, the propensity scores were used in matching analysis. Because the propensity scores take into account all of the listed covariates, the formula for matching only needs to include the propensity scores and not all of the covariates. The confounding of the covariates can be controlled through this method, and further analysis will not be affected by the confounding. Propensity scores were estimated using probit regression on a set of observed covariates, many of which are thought to be associated with the treatment group. Propensity score

matching allows one to estimate the average treatment effect on the treated (ATT), which is the amount of increase or decrease from the baseline score that would have been observed if those who got the treatment had not gotten it.

Nearest neighbor matching was performed using the propensity scores on six categorical outcome variables: number of moves while in care, number of days in care, Year 1 level of placement, Year 2 level of placement, Year 3 level of placement, and cost for care and case management. Calipers were not used in order to increase the number of matches in the small sample groups. The outcome measure is the ATT and can be described as the effect of the treatment estimated by the difference between the mean outcome for NTF treatment individuals and the mean outcome for control individuals (using the matched individuals). The ATT nearest neighbor matching was run using bootstrap statistics to obtain corrected confidence intervals (bootstrapping set to 500). Logistic regression was performed on eight binary variables to obtain an odds ratio. These variables included placed with one sibling, placed with all siblings, placed out of the county, placed in a permanent setting at the end of each year, abused in custody, and abused in the first 6 months after permanent placement. The logistic regression was performed using quintiles of the propensity score and group assignment in order to account for the confounding of the covariates (Cepeda, Boston, Farrar,

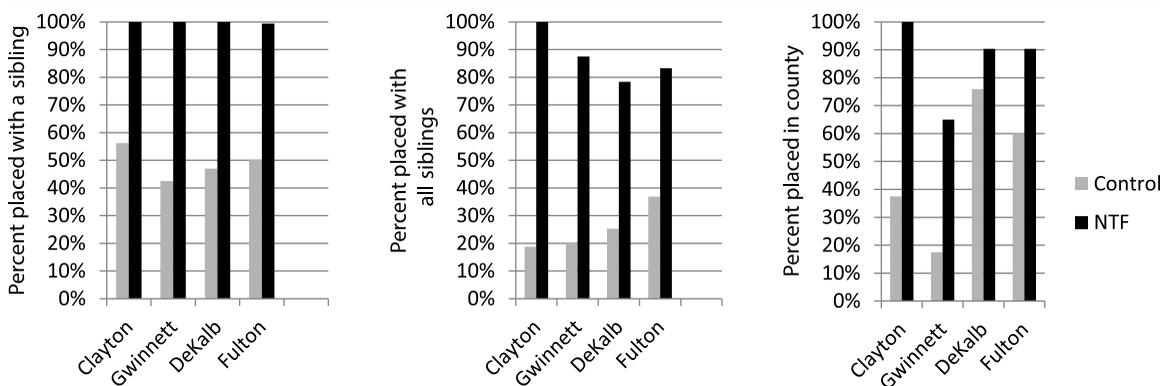
& Strom, 2003). For several of the logistic regression tests, no odds ratio could be obtained because all of the children were placed with one or all siblings, or all had achieved permanent placement before Year 3. In these cases, a chi-square test was run to compare outcomes.

## Results

### Stability

Stability was evaluated through four measures: placement with at least one sibling, placement with all siblings, placement within county, and number of moves while in care. The results for these outcomes are shown in Figure 1. The graph on the left shows the percentage of children by county who were placed with at least one sibling at the time of initial placement. Almost all of the children in the NTF group (99.76%) were placed in a home with at least one of their siblings, compared to only 48.68% of the control group. The graph in the center shows the percentage of children who were placed in a home with all of their siblings; 82.97% of the NTF children were placed with all of their siblings compared to 29.26% of the control group. The differences in each county were significant at the  $p < .001$  level. The graph on the right shows the percent of children initially placed in their home county: 58.75% of the children in the control group were placed in their home counties, while 85.85% of the NTF group were placed in their home county. The propensity analysis found that

FIGURE 1. Stability outcomes.



Variable	Clayton		Gwinnett		DeKalb		Fulton	
	ATT	95% CI	ATT	95% CI	ATT	95% CI	ATT	95% CI
Number of moves	-3.038	-5.75 -0.722	-2.084	-2.989 -1.286	-1.889	-2.333 -1.421	-0.514	-0.790 -0.221

Note. Displayed are four stability outcomes for this study. All visual representations are based on the propensity analysis (Rast & Rast, 2013). The graph on the left shows the percentage of children by county and group placed with at least one of their siblings, the graph in the middle shows the percentage of children placed with all of their siblings, and the graph on the right shows the percentage of children initially placed in their home counties. The gray columns represent the control group and the black columns represent the Neighbor To Family (NTF) group in each graph. The table at the bottom of the figure shows the actual propensity analysis data for the number of moves per child. The average treatment effect for the treated (ATT) shows the comparison of moves between the two matched groups, with negative numbers showing reduced moves for the NTF group.

children in the NTF group of all four counties were 64% to 89% less likely to be placed out of county. The final measure of stability was the number of placements the child had while in care. Each time that a child moves from one foster care placement to another placement is another form of trauma for the child. The data in the table at the bottom of Figure 1 show that the 417 children in the NTF program averaged 1.34 moves per child (counting the move to a permanent placement) compared to 2.75 moves for the control group. Thus the children in NTF care were moved less than half as often as the control group. The propensity analysis shows significantly fewer average numbers of moves for the group in NTF care than for the control group in all four counties at the  $p < .01$  level.

**Safety**

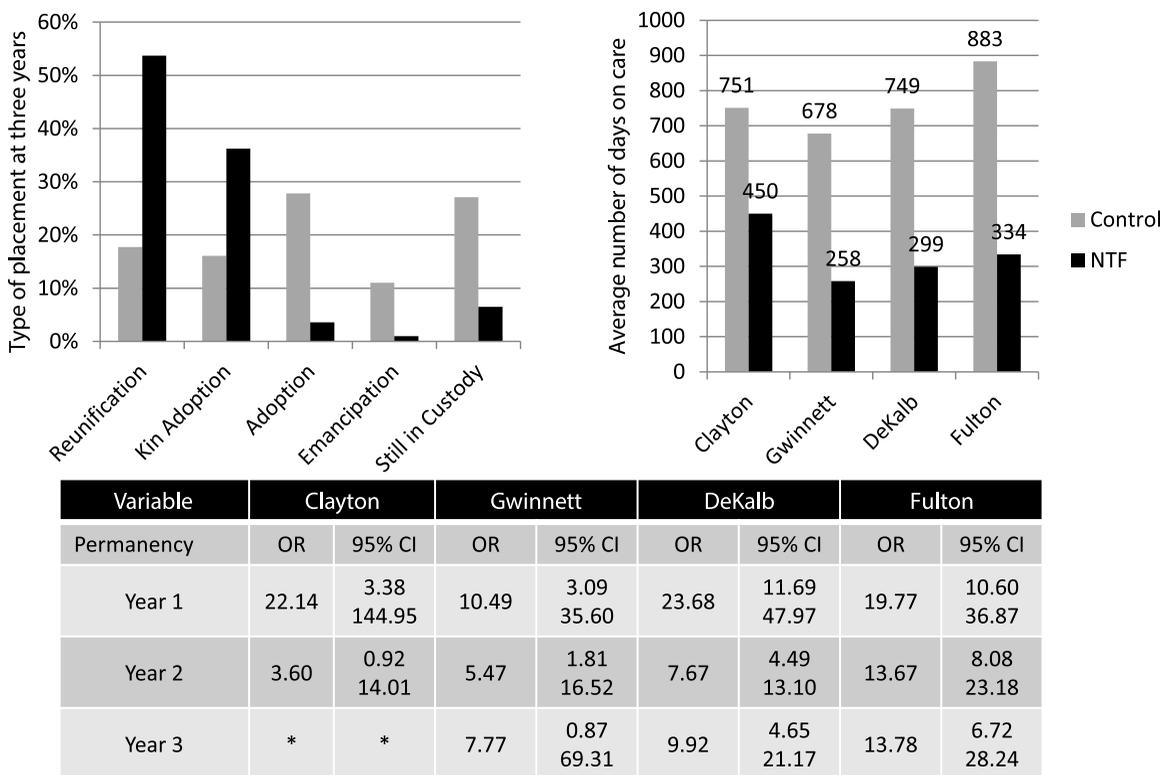
For this study, safety was measured in terms of the number of confirmed allegations of abuse or neglect while in placement and for those children who were placed in permanent placements for the 6 months after leaving care. The rate of abuse in both groups was very low, and although the experimental group had

fewer instances of abuse in all eight condition variables, abuse in custody was only significant in Clayton and Fulton Counties and abuse after placement was only significant in DeKalb County. The lack of significant differences was largely attributable to the very low instances of substantiated abuse and neglect in all variables.

**Permanency**

Permanency was examined through three measures shown in Figure 2. The table at the bottom of the figure shows the propensity score-matching logistic regression odds ratios for permanent placement in each of the 3 years by county. In Year 1, 26.38% of the control group had been placed in permanent placements compared to 54.44% of the NTF group. In Year 2, 54.44% of the control group were placed in permanent placements compared to 82.97% of the NTF group. In Year 3, 71.70% of the control group were placed in permanent placements compared to 93.53% of the NTF group. Each of these Year 1 and 2 comparisons is significant at the  $p < .001$  level. The logistic regression of binary variables using propensity score quintiles shows the odds ratio

**FIGURE 2.** Permanency outcomes.



Note. Displayed are the permanency outcomes for this study. All visual representations are based on the propensity analysis (Rast & Rast, 2013). The graph on the left shows the type of placement of the children after 3 years. The graph on the right shows the average number of days that each child was in care by county. The gray columns represent the control group and the black columns represent the Neighbor To Family (NTF) group in each graph. The table at the bottom of the figure shows the actual propensity analysis for the odds ratios that children would be placed in a permanent placement at the end of each of the years of the study.

comparisons and confidence limits. The odds ratio for Clayton County for the third year could not be calculated because all of the NTF group was placed in less than 2 years. The NTF group was different from the control group in this ( $p < .005$ ). In Year 1 the children in the NTF care were 10.49 (Gwinnett), 19.77 (Fulton), 22.14 (Clayton), and 23.68 (DeKalb) times more likely to be placed in a permanent placement as the control group. In Years 2 and 3 the odds ratios decreased, because fewer children were still in NTF care.

The graph on the top left section of Figure 2 shows that 54% of the children in the NTF group were reunited with their parents compared to 18% of the control group; 36% of the NTF group were adopted or taken in guardianship by relatives compared to 16% of the control group; 4% of the NTF group were adopted by non-relatives compared to 28% of the control group; and 11% of the children in the control group aged out of the system without a placement compared to 1% of the children in NTF services. At the end of 3 years, 27% of the control group was still in custody compared to 6% of the NTF group. The final analysis (number of days in care) is shown in the graph on the right side of Figure 2, which shows a visual representation of the ATT from the propensity score matching. Children who were still in care at the end of the 3-year period were

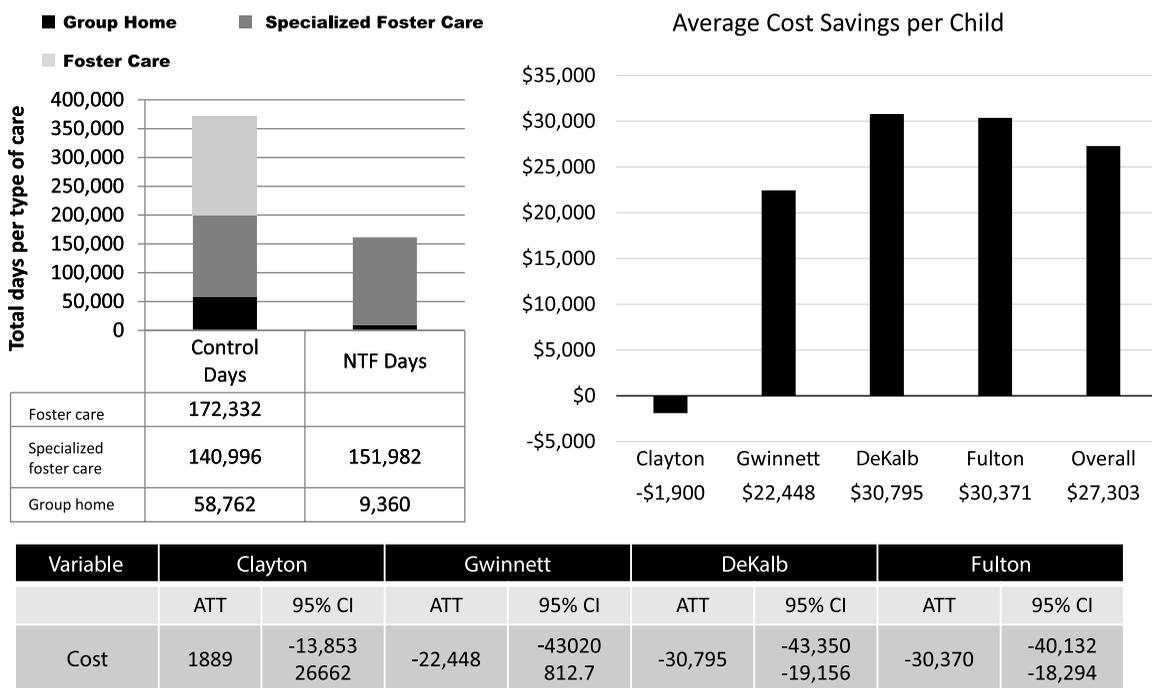
assigned the maximum value of 1,095 days. The confidence intervals were bias-corrected using bootstrap statistics. All four of the comparisons are significant at the  $p < 0.01$  level.

**Cost of Services**

The final comparison of the two groups was on the cost of services. The cost might be viewed as actual cost during services and/or predictive cost based on the improved outcomes for the children and families. Many predictive approaches suggest that the children who have more stable foster care placements—remain attached to siblings, are subjected to less abuse during and after treatment, and reach permanent placements sooner—will have much better outcomes as adults, which can be turned into predictive cost benefits for society. This article does not report these predictive comparisons but focuses on a very conservative comparison of immediate costs.

The data focused on child welfare services provided for each child for a 3-year period and reported the number of days in placement and the type of placement. Three of the significant findings of the study are that children in the control group spent a much longer time in care, had more moves, and spent more

**FIGURE 3. Cost analysis.**



Note. Displayed are analyses that impact on cost outcomes based on the propensity analysis (Rast & Rast, 2013). The graph on the left shows the total number of days that the children spent in three levels of care (regular foster care, specialized foster care, and group home). The greater number of total days and days in group home resulted in the largest share of the cost difference between the groups. The graph on the right shows the difference in average cost per child by county and for all of the children. The table at the bottom of the figure shows the actual propensity analysis data for the cost data. The average treatment effect for the treated (ATT) shows the comparison of average costs per child by county.

days in higher levels of care. The chart at the top left of Figure 3 shows the level of care of the placements for the two groups. While in care, children were placed in foster care; specialized foster care (which includes NTF services); or a higher level of care including group homes, residential centers, and psychiatric hospitals. In all four counties there was a significant difference,  $p < .01$ , between the average levels of placement in Year 1 of the NTF treatment group and the control group. The total number of days in levels of care more restrictive than specialized foster care was six times larger for the control group, which accounts for the higher cost of care.

Program costs for NTF were calculated at the NTF rate for the days the children were served and the cost of higher levels of care. The costs for the comparison group were calculated at the base rates for foster care, specialty foster care, and the group home daily rate. The rates for higher level of placement for children in both comparison groups were all calculated at the group home rate even though there were multiple days in higher and thus more expensive levels of care.

In terms of services, the cost of casework support was assumed to be the same for the two groups, although the additional case management support provided by NTF lessened demands on the caseworkers. The shorter stay in care for the NTF group meant that children were in care for significantly shorter periods of time, and the additional cost of casework staff for these days was calculated at \$3.51 per day for the additional days that children were in care. The graph on the right side of Figure 3 shows the average cost savings per child in NTF services was \$27,303. The ATT is shown in the table at the bottom of Figure 3. The results were not significant for Clayton and Gwinnett Counties, but the average cost in DeKalb and Fulton Counties was \$30,000 less for the NTF group than the control group.

## Discussion

The primary goal and social mandate of child welfare systems is to protect children from harm, which might be defined as abuse, neglect, or various forms of trauma. The adverse childhood experiences study (Edwards et al., 2005) shows that trauma has long-lasting effects on health and well-being. Protecting children from ongoing abuse and neglect is one necessary action to reduce this trauma, but when the action to stop abuse and neglect results in another series of traumas for the child, the results are steadily increasing bad outcomes. A more child-friendly system addresses these potential additional traumatic events and simultaneously builds protective factors that can reduce the impact of the trauma. NTF has carefully

addressed these issues and developed a program that promotes many of the protective factors while significantly reducing the additional trauma imposed by placement in foster care. The approach results in more recruitment of foster parents to serve whole sibling groups, placements closer to friends and communities, placements with siblings, more stability in placement, quicker reunification and permanent placement, and stronger connections to family—and the program costs less per child than traditional services. More than three times as many children were placed in permanent homes with biological family members over the course of the 3 years. NTF offers a humane and professional alternative to traditional foster care that works for sibling groups and their families and ultimately for society as a whole.

Cost comparisons show that the service has a significant cost savings while producing much better outcomes for children and families. The propensity matching showed that the children who received NTF services had very similar characteristics to the matched group at intake, which strengthens the confidence that the analysis shows the real impact of NTF services compared to more traditional foster care services. The fidelity evaluation done by Vonk (2007) provides confidence that the NTF model was provided with reasonable fidelity, so the differences should be largely due to the differences in the models.

The first research question addressed the impact of NTF services. Four positive findings were observed. First, recruiting foster care caregivers as employees with benefits and expecting them to be well trained and take full sibling groups results in much better outcomes for children in sibling groups. Second, NTF is a successful strategy for placing children with their siblings in their home communities. Third, doing immediate and assertive outreach to families and extended families by professional caregivers strengthens family ties and results in more children being placed with parents and extended families. Fourth, using a team approach that empowers both the professional caregivers and families strengthens families.

The stability data demonstrated that hiring professional caregivers to take whole sibling groups from the communities with the highest need for foster care was instrumental in keeping significantly more of the children in their home counties, and thus closer to friends, family, and local schools, and connected to their home communities. It also resulted in a significantly higher number of siblings being placed together and more siblings being placed with all of their siblings, which have been shown to reduce trauma and social, emotional, and behavior challenges as children, which ultimately results in many health and behavioral health advantages as adults. The combination of professional

caregivers and sibling groups resulted in improved stability on all measures.

The placement of well-supported professional caregivers who are tasked with coparenting with biological parents or others designated by child welfare as prospective permanent caretakers has been shown to significantly decrease the time children are in foster care. The direct work by the caregivers with biological parents and extended family, and the additional services for parents, resulted in much higher rates of reunification and placement with extended family members compared to nonfamily adoptions. The overall impact of all of the aspects of the model were significantly reduced time to permanency and decreased time in higher levels of care, which is an indirect reflection of the decreased trauma for the NTF group. Inclusion of the foster caregivers as equal members in the team-based approach to care improved their engagement, self-efficacy, and retention in their positions (Vonk, 2007).

This research expands the knowledge related to sibling foster care in several ways. This article expands on program evaluations of the NTF program of sibling foster care by adding a matched control group to provide the first controlled research on the model. The study also covers a 3-year period for each child, providing a much longer evaluation window. This study expands the knowledge regarding NTF in four ways. First, as mentioned, it is a controlled comparison, not just a program evaluation. Second, the study follows both the experimental and control subjects for 3 years. Third, it shows the impact of hiring professional caregivers whose goal is to keep sibling groups together. Fourth, it shows the impact on reunification and permanency of including the professional foster parents as full members of the team.

In this analysis, propensity score matching was a good method for creating a surrogate of the control group for a counterfactual outcome. Propensity scores for all individuals were calculated based on eight variables: county, being part of a sibling group, date of entering foster care, race, sex, age, level of care for the child, and primary reason for foster care placement. The mean propensity score for the control group was then compared to the mean propensity score for the NTF group, and these values were found to be significantly different. This finding suggests that even though the control group was picked by frequency matching, the groups were still significantly different. While it is counterintuitive to desire difference between groups when they are used in comparison, seeing this difference in propensity score matching shows that this method of control was, in fact, needed. When the groups are different and the difference is measurable, propensity score matching will be successful in controlling for these differences and will approach the

standard of randomization. Using propensity score matching in this study led to successful control of the covariates and confounding that are measured in these data, as well as results that are a good surrogate for a randomized clinical trial.

## Considerations and Limitations

This study was conducted in four counties of central Georgia that had children who remained in child welfare custody for extended periods of time. Two of the counties had fewer available foster care slots than the number of children who needed to be served, which made it more difficult to place children in their home communities and to place sibling groups together. Placement out of county in these counties is slightly higher than the national average, and the overall rate of placing sibling groups together is close to the national average. The average length of care is also slightly longer than the national average. All of these factors could impact the generalizability of the results to other communities that have higher proportions of foster homes and are able to successfully find permanent placements for children sooner. The research needs to be replicated in other communities to test these factors. Propensity score matching was successful in this study, but a larger pool of individuals for the control group would have increased precision. The small sample size of Clayton County was also a limiting factor to the propensity score matching analysis and it made matching more difficult.

This analysis significantly underestimates the actual costs of the control group for several reasons. First, NTF provides a wide range of additional services for children and their parents, which might be purchased in other ways for children in other programs. These costs were not obtainable, so the cost comparisons only reflect the direct cost to the state of Georgia for residential placement and casework compared to the full range of services provided by NTF. In addition, more than four times as many children remained in care at the end of the study, and these future costs would increase the total cost for the comparison group for the residential and casework costs. This means that the real savings of NTF services were larger than the very conservative cost figures reported.

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