

**Length of Treatment in CAMHD Programs:
Using the CAFAS and MTPS Assessment Instruments
for Decisions Regarding Discharge**



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Executive Summary

Research on mental health services offers very little insight regarding appropriate lengths of treatment for the various levels of mental health care (e.g., community based residential, intensive in-home care) for children and adolescents. The Research and Evaluation Office of the Child and Adolescent Mental Health Division (CAMHD) analyzed “length of treatment”¹ data for youth in Hawai’i who were discharged from mental health services from CAMHD contracted providers within a recent two year period. The resultant analysis may offer some data-based guidance regarding the point where improvement levels out or ‘plateaus’ (and possibly deteriorates) over extended treatment episodes. It is at this point in the youth’s treatment episode that CAMHD staff (Care Coordinators) who provide case planning for these youth and contracted providers of these services should probably ‘revisit’ the efficacy of keeping a youth in that particular type of treatment intervention.

The analysis of length of treatment, as related to the monthly mean scores on two mental health assessment instruments (the Child and Adolescent Functional Assessment Scale or CAFAS and Monthly Treatment and Progress Summary or MTPS) suggests that, depending on the level of care one is looking at, some patterns emerge that can offer CAMHD guidance regarding the number of months that youth should be reassessed for appropriate continuance in a treatment program. Further, across all levels of care, the data suggest lengths of stay that are very similar (within one month) across both the CAFAS and MTPS assessment tools. The agreement in maximum improvement ranges between these instruments suggests some support for the findings.

This range of months is referred to in this report as the ‘maximum improvement’ range, because it represents the best average score for *a majority of youth* on the CAFAS and MTPS in that particular level of care. In some cases, a small proportion of youth benefitted from treatment past this maximum improvement range. It must be emphasized that youth should still be assessed on a case-by-case basis, and that these results present only average improvements over time. These results should be used as a guide, and not the sole factor, in making decisions about the length of time for a youth’s treatment plan.

The following summarizes the average number of months it took youth to reach maximum improvement for each level of care:

Table 1. Length of Treatment Guidelines: Summary of Findings

Level of Care	Months	Level of Care	Months
Hospital Based Residential	2 to 3	Community-Based Residential III	5 to 6
Multisystemic Therapy	4 to 6	Therapeutic Group Home	5 to 7
Functional Family Therapy	4 to 6	Therapeutic Foster Home	6 to 8
Intensive In-Home	5 to 7	Community-Based Residential II	7 to 11
Multidimensional Treatment Foster Care	5 to 8	Community-Based Residential I (Community High-Risk)	10 to 12

¹ Throughout the document the terms ‘length of treatment’ and ‘length of stay’ are used interchangeably.

I. Introduction

Background

In preparation for the development of CAMHD’s new Interagency Performance Standards and Practice Guidelines (IPSPG or ‘Orange Book’), the Research and Evaluation Office (REO) analyzed available mental health services data to attempt to assist the development committee for the ‘Orange Book’ to determine appropriate and effective length of treatment guidelines for the major levels of care (LOC) offered by the agency. By examining local outcome data entered by CAMHD and its providers, CAMHD developed recommended timeframes that potential contractors should utilize to treat youth referred to them for services.

Literature Review

The literature that addresses the relationship between length of treatment in mental health services and youth outcomes is sparse. There is even less research on this topic for specific levels of care. Table 2 summarizes the mental health research literature by “Level of Care,” “Average Length of Treatment,” “Significant Outcome Improvement,” and CAMHD’s current “Interagency Performance Standards and Practice Guidelines” recommended practices created for mental health treatment authorization (and re-authorization).

The column labeled “Average Length of Stay” includes the reported average time(s) spent in each mental health treatment program level of care based on one or more research articles that explored that particular level of care (e.g., one study on the Therapeutic Group Home level of care indicated the average time in service was six months). The column labeled “Significant Outcome Improvement” indicates the amount(s) of time that youth took to show improvement in the specific level of care according to the research articles cited (e.g., Community-Based Residential Level III suggests significant improvement continues until the third or ninth months, depending on the study). Lastly, the “IPSPG” column represents the current CAMHD-recommended maximum amount of time before a clinical psychologist or clinical director must give their re-authorization for further treatment in the same level of care.

Table 2. Summary of Research on Length of Treatment for Mental Health Services by Levels of Care

Level of Care (LOC)	Average Length of Treatment	Significant Improvement Outcome	Interagency Performance Standards and Practice Guidelines (IPSPG, 2006)
Hospital-Based Residential (HBR)	Meta-analysis showed length of stay to be from 7 to 25 days of service (Tulloch et al., 2011).	n/a	Treatment exceeding 15 days of service requires approval from CAMHD Medical Director.
Community High Risk (CHR)/ Community-Based Residential Level II (CBRII)	n/a	Minimum of 12 to 24 months of treatment (National Adolescent Perpetrator Network, 1993)	Treatment exceeding 5 months for both services requires approval from the Clinical Director at each Family Guidance Center.
Community-Based Residential Level III (CBRIII)	Group of studies showed an average stay to range from 6 to 19 months (Butler et al., 2009; Hoagwood & Cunningham, 1992; Hussey & Guo, 2002; Leichtman et al., 2001; Lewis, 1988; and Moore & O'Conner, 1991; Savas et al., 1993)	Range from 3 to 9 months of service (Green et al., 2001; Hoagwood & Cunningham, 1992; Hussey & Guo, 2002; Lyons & McCulloch, 2006; Shapiro et al., 1999)	Treatment exceeding 5 months of service requires approval from the Clinical Director at each Family Guidance Center
Therapeutic Group Home (TGH)	Study showed average length of stay to be 6 months (Scott & Lorenc, 2007)	n/a	Treatment exceeding 5 months of service requires approval from the Clinical Director at each Family Guidance Center
Therapeutic Foster Home (TFH)	Study showed average length of stay to be 15 months (Hussey & Guo, 2005)	n/a	Treatment exceeding 9 months of service requires approval from the Clinical Director at each Family Guidance Center
Intensive In-Home (IIH)	Average length of treatment for IIH treatment package is 4 months (Stevens et al., 2006)	n/a	Treatment exceeding 5 months of service requires approval from the Clinical Psychologist at each Family Guidance Center
Functional Family Therapy (FFT)	Average length of treatment for FFT package is 3 to 6 months (Sexton & Turner, 2010)	n/a	Treatment exceeding 6 months of service requires approval from the Clinical Director at each Family Guidance Center

II. Methods

Sample

The sample used for this analysis (across all levels of care) included 1,790 youth who were discharged from episodes of care that overlapped at any point between the recent two-year period from October 1, 2008 to September 30, 2010. These youth had 3,333 episodes of care within this period. Individual youth were included more than once if they had multiple episodes of care that had more than 30 days between each episode (or more than five days for Hospital-Based Residential services). The numbers of youth and episodes of care vary by service type and are indicated in the sections below. A detailed description of typical characteristics of youth within each service type can be found in CAMHD's Annual Factbook (<http://hawaii.gov/health/mental-health/camhd/library/pdf/rp Eval/ge/ge/ge029.pdf>).

Instruments

The Child and Adolescent Functional Assessment Scale (CAFAS) measures impairment across eight subscale domains: role performance in school/work, role performance at home, role performance in the community, behavior toward others, moods/emotions, self-harmful behavior, substance use, and thinking (Hodges, 1998). Care Coordinators at local Family Guidance Centers gather information on youth to select specific behavioral descriptions on the CAFAS that reflect a youth's level of impairment across the eight domains. The level of impairment for all items in the CAFAS is measured by a four-point scale (i.e., severe=30, moderate=20, mild=10, no/minimal=0). The total CAFAS score can range from 0 to 240, with higher scores indicating greater overall functional impairment. Psychometric properties of the CAFAS are well-documented in the literature. The literature shows that the CAFAS has internal consistency, inter-rater reliability, stability across time, and concurrent and predictive validity (Hodges, 1998; Hodges & Wong, 1996; Hodges et al., 1998; Hodges et al., 2000; Hodges & Kim, 2000; Manteuffel et al., 2002). The CAFAS is conducted for all youth registered at CAMHD at approximately 3 month intervals.

The Monthly Treatment Progress Summary is a locally constructed clinician report form designed to capture data on the service format, service setting, treatment targets, clinical progress ratings on each target, and intervention strategies (practice elements) on a monthly basis. For the scope of the current report, only clinical progress ratings are utilized. Specifically, clinicians provide a progress rating for each target that represents the degree of progress achieved between the child's baseline level of functioning and the goal specified for the target. Progress ratings are provided using a 7-point scale with the descriptors of: Deterioration < 0%, No Significant changes 0 – 10%, Minimal Improvement 11 – 30%, Some Improvement 31 – 50%, Moderate Improvement 51 – 70%, Significant Improvement 71 – 90%, and Complete Improvement 91 – 100%. The average score of clinical progress across all target ratings is calculated for every youth at every month.

Analysis

The particular services that were selected for inclusion in these analyses were selected based on the needs of CAMHD staff in developing policies and guidelines, as well as the following criteria: 1) the services represent some of the most frequently used in CAMHD's array of mental health services, 2) the services are residential and/or long-term (justifying a length of treatment analysis), and 3) the services involve a therapeutic element on which to judge improvement over time. Services such as medication management and assessments were not included.

All service episodes that met the inclusion criteria were aggregated so that means scores could be calculated across all youth who had completed MTPS and/or CAFAS forms at each month (all first-month data were averaged, all second-month data were averaged, etc.). Standard errors were also calculated for MTPS and CAFAS scores at each month and are included at each data point in the graphs below.

Based on the resulting patterns of mean scores over time, ranges were identified where a majority of episodes showed a "maximum improvement" on MTPS and CAFAS scores. Only a minority of youth, and in some cases a very small proportion, showed additional improvement beyond this range.

Interpreting Graphs

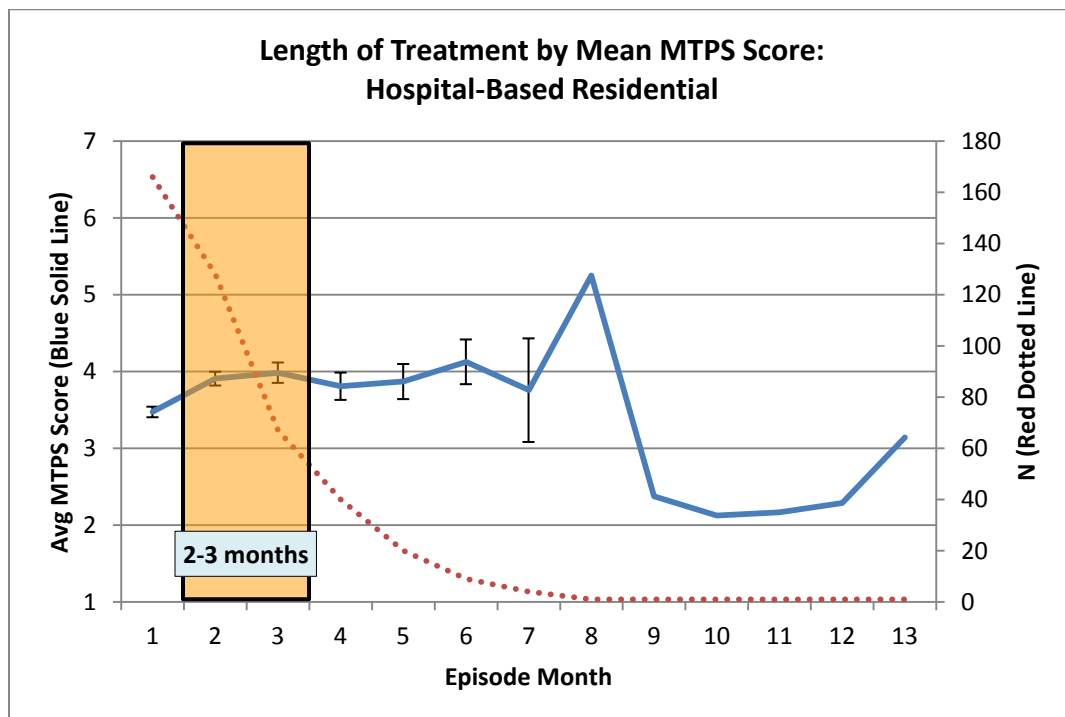
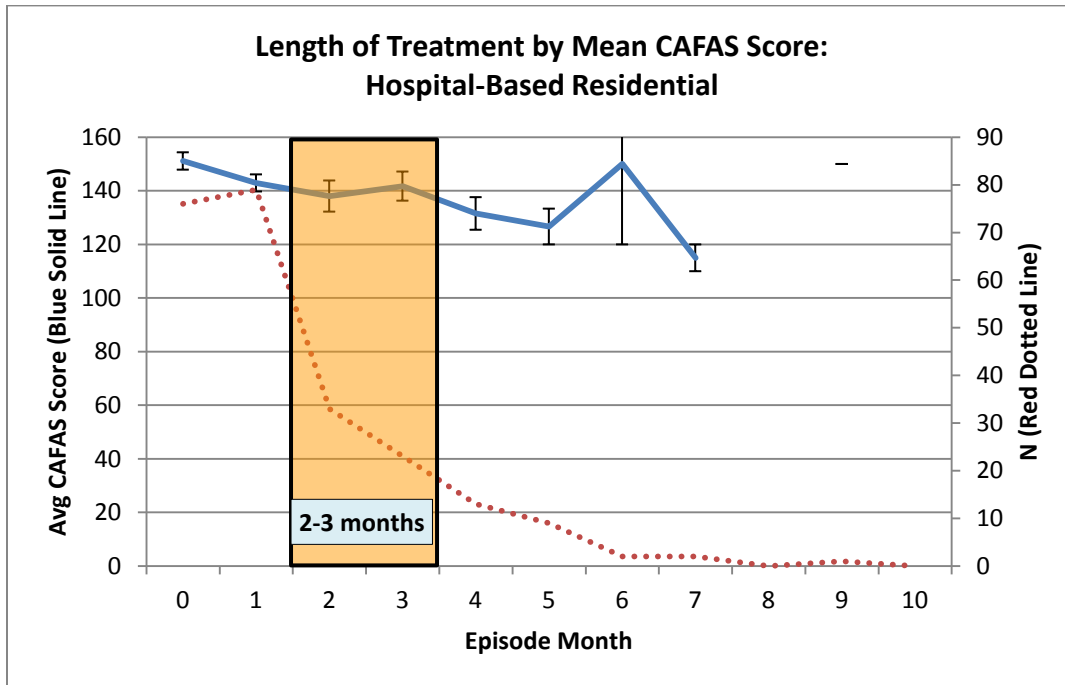
Here is some information to assist in the reading of the graphs presented below:

- The x-axis is the "Episode Month" in which the assessment occurs.
- The y-axis is the "Average Assessment Score" (CAFAS or MTPS) for a given "Episode Month."
- The solid blue line is the "Average Assessment Score" over time
- The red dotted line is the "Number of Assessments" that are a part of each episode month over time.
- The 'rectangular box shaded in orange' is the approximate timeframe within which the average score was highest for a majority of cases and, as a result, suggests a good time to re-assess a youth's involvement in the current treatment modality.

In interpreting these graphs, one must take into account both the average assessment score *and* the size of the sample upon which that average is based. As youth are discharged or attrition out of the treatment, the sample size decreases for the calculation of the average. As the size of the youth population decreases, so does one's confidence in the calculated average. So, it is important to consider size when examining the relationship between treatment duration and assessments scores. In other words, the average assessment score over time becomes less meaningful as it moves toward fewer and fewer youth that are included in the calculation.

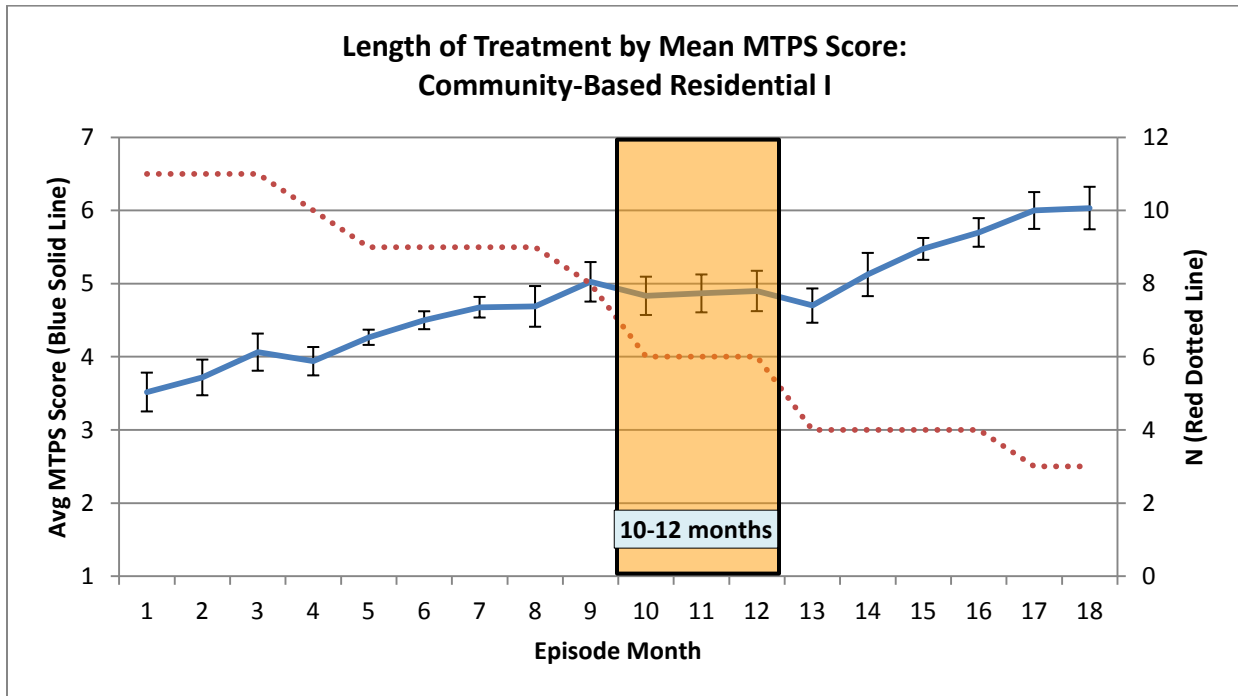
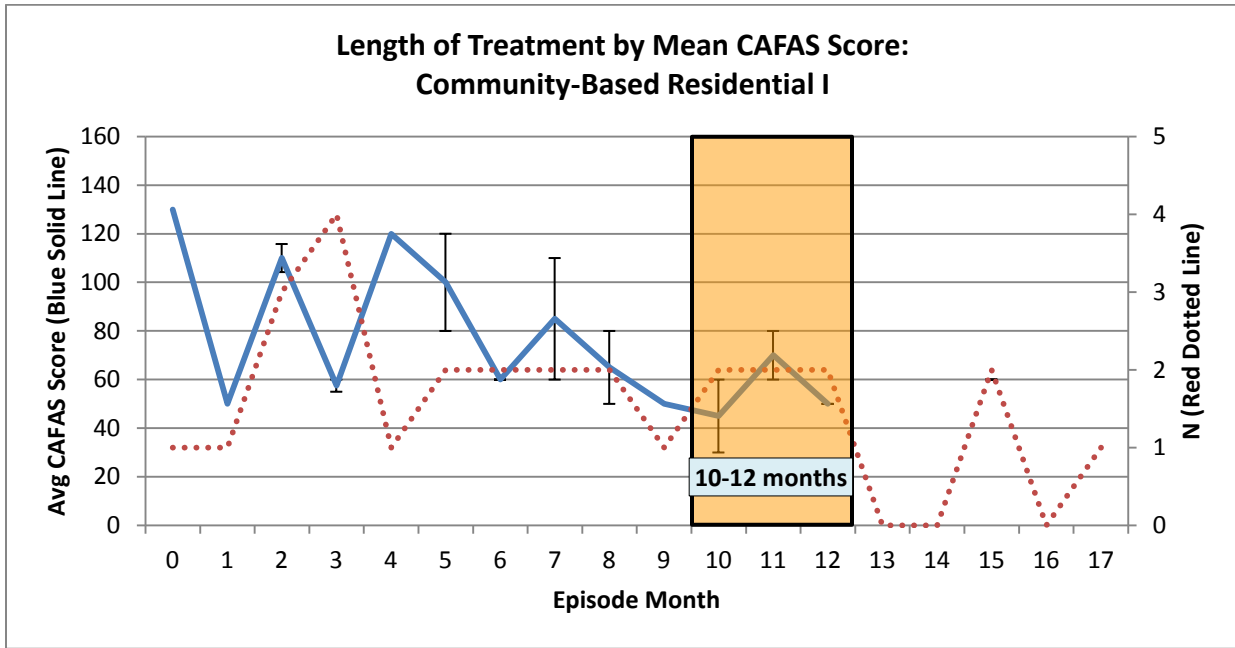
III. Findings

A. Hospital-Based Residential (HBR)



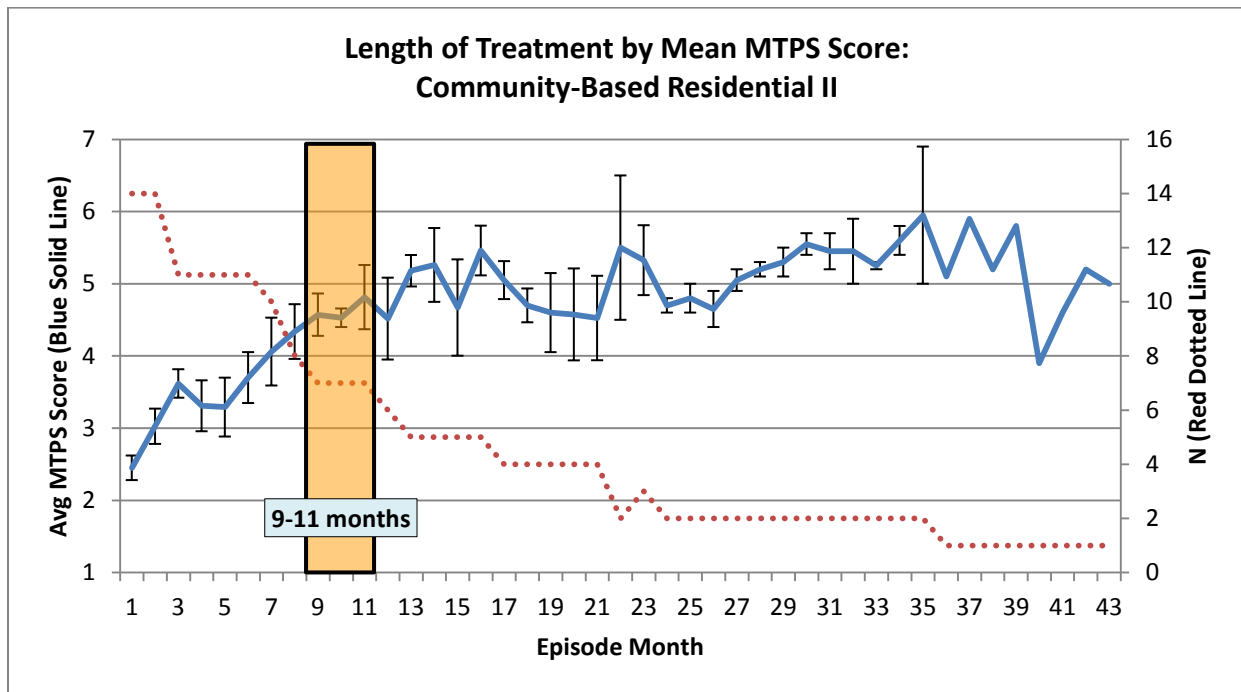
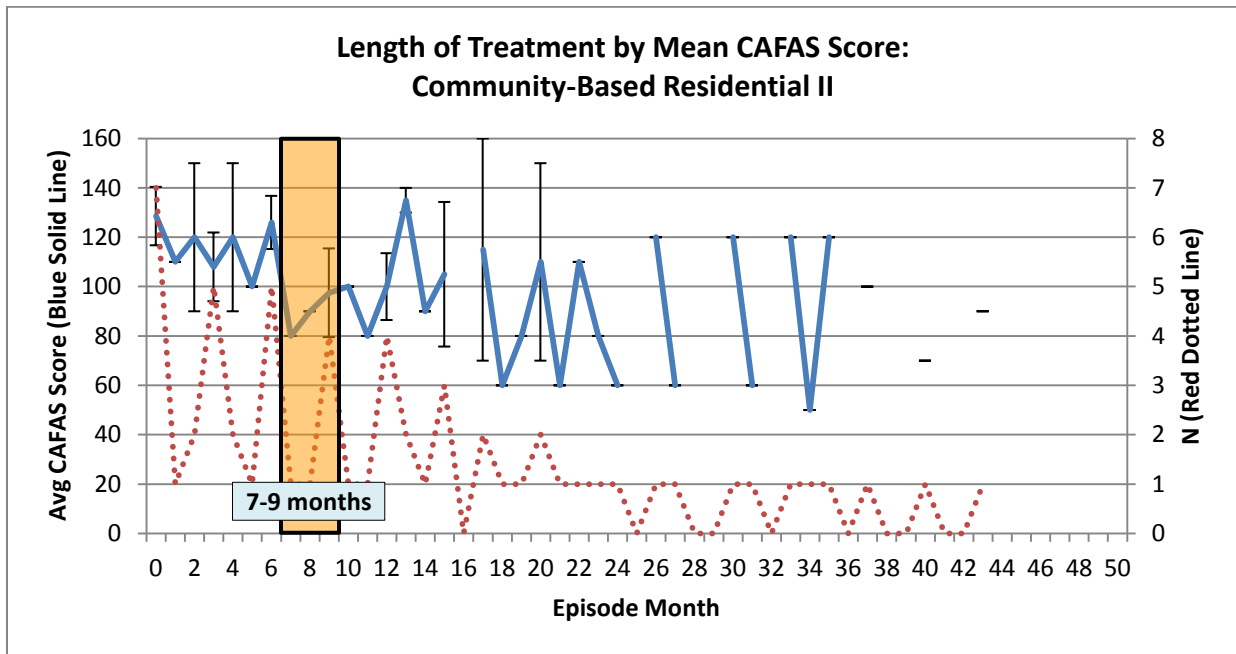
For Hospital-Based Residential Services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 2 and 3 months.

B. Community-Based Residential I (CBRI)



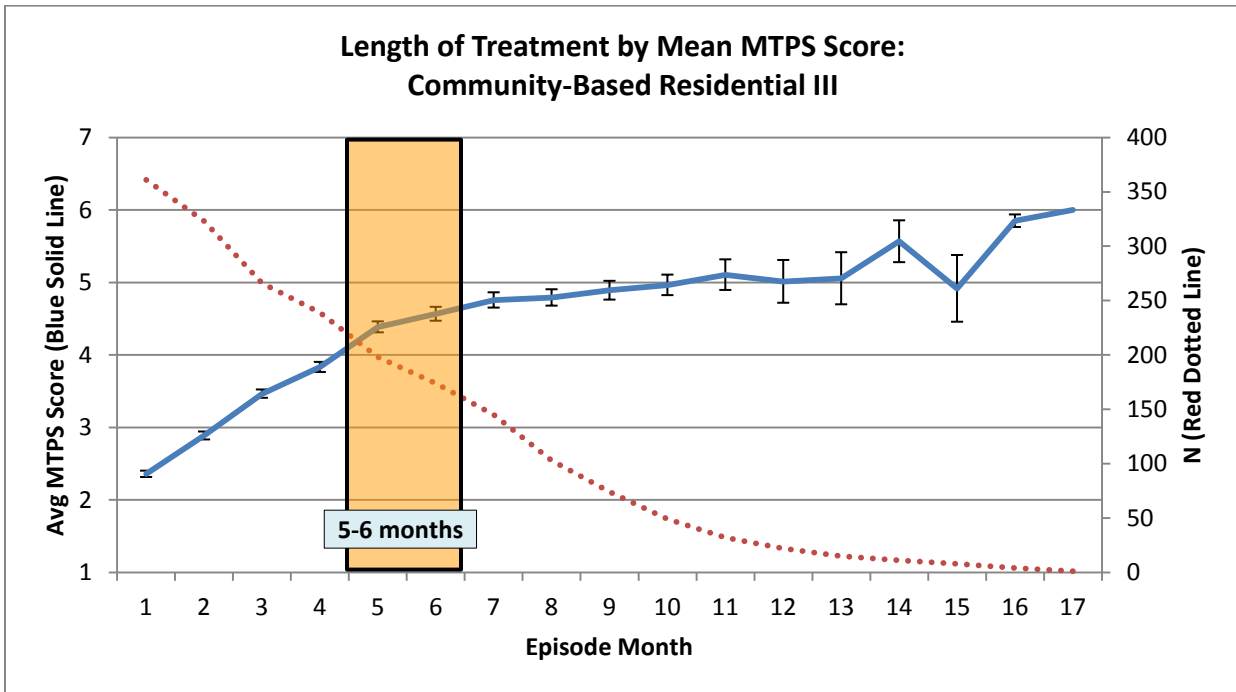
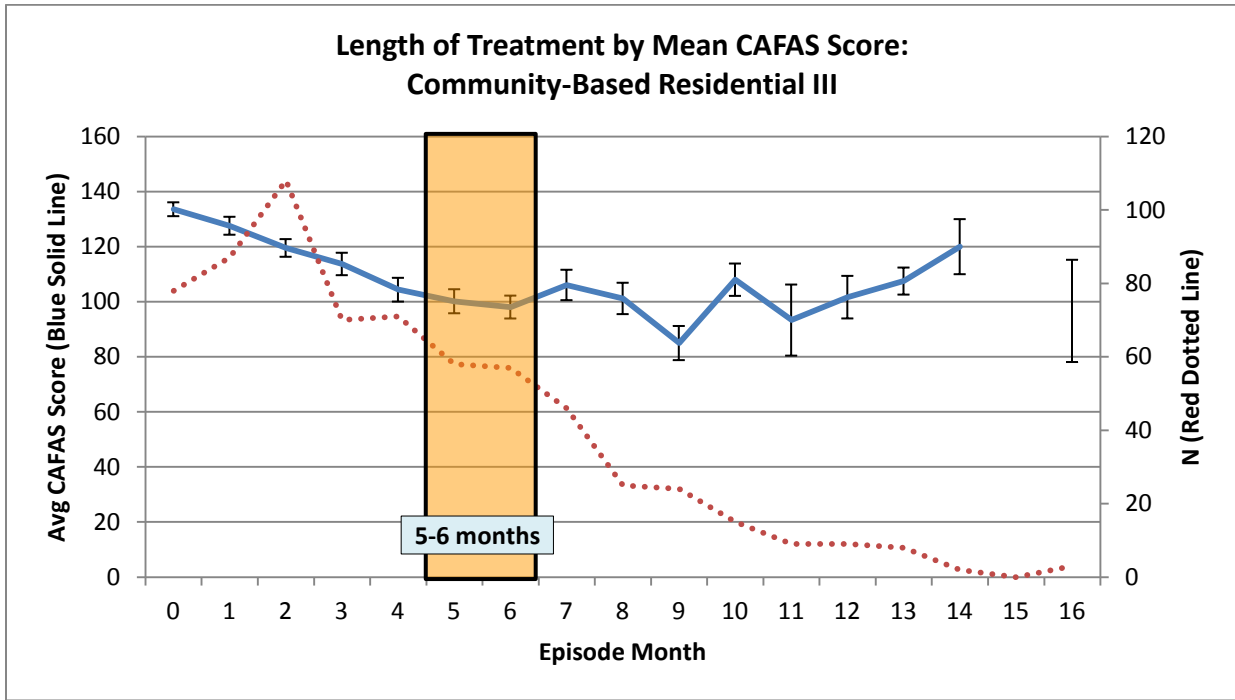
For Community-Based Residential I Services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 10 and 12 months.

C. Community-Based Residential II (CBRII)



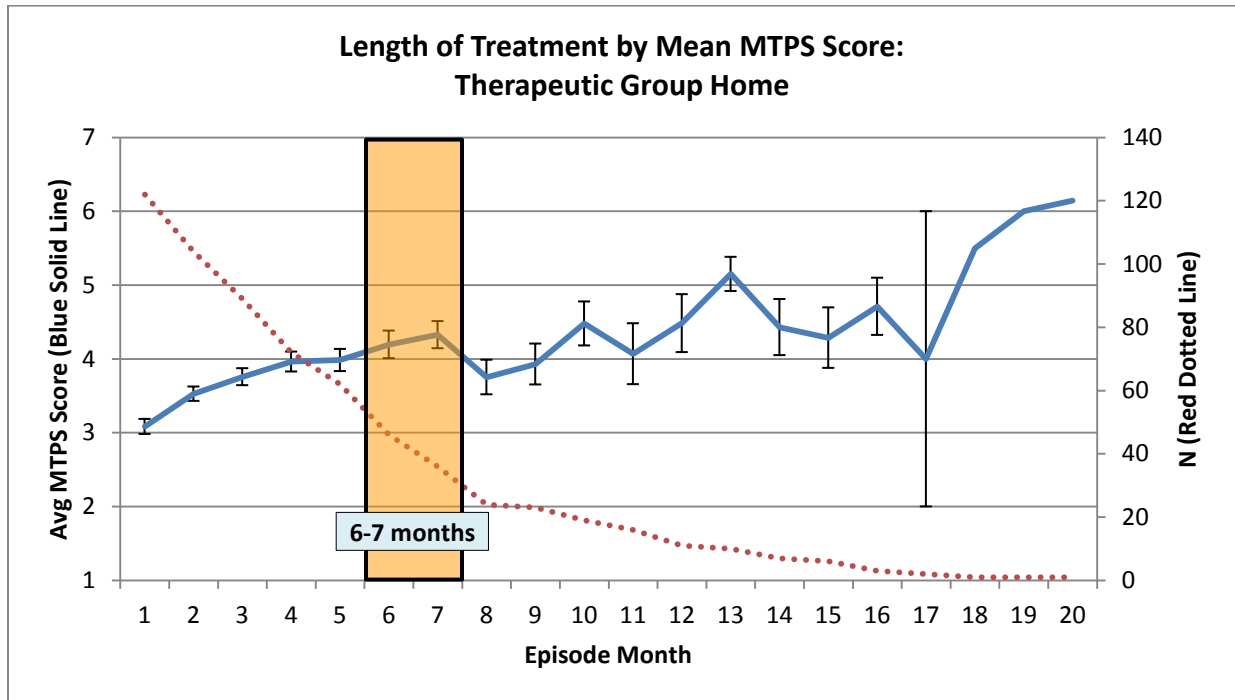
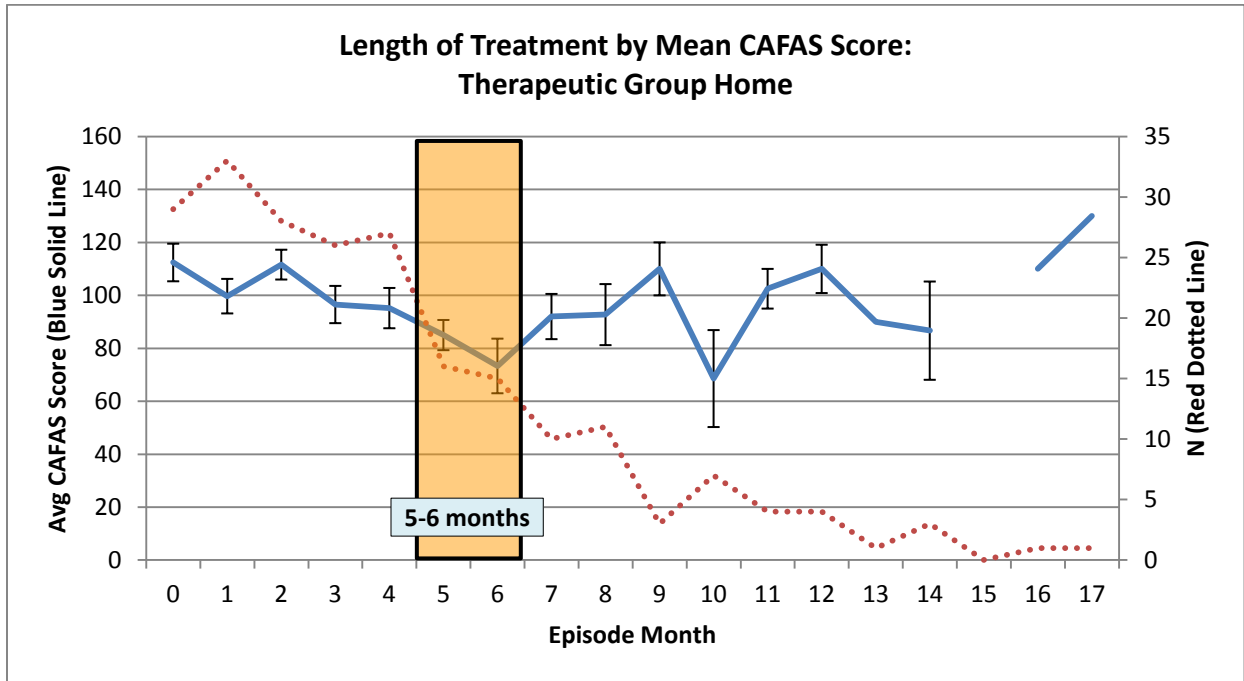
For Community-Based Residential II services, a majority of youth showed maximum improvement on the CAFAS between 7 and 9 months, and a majority of youth showed maximum improvement on the MTPS between 9 and 11 months.

D. Community-Based Residential III (CBRIII)



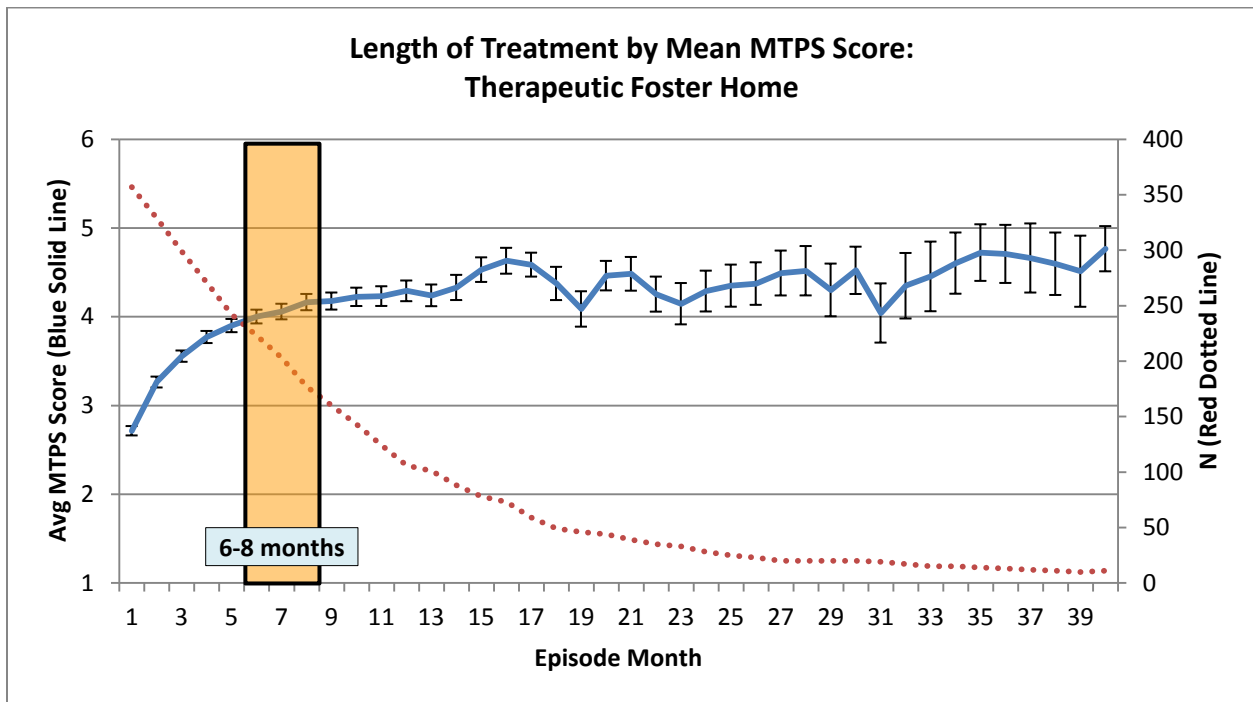
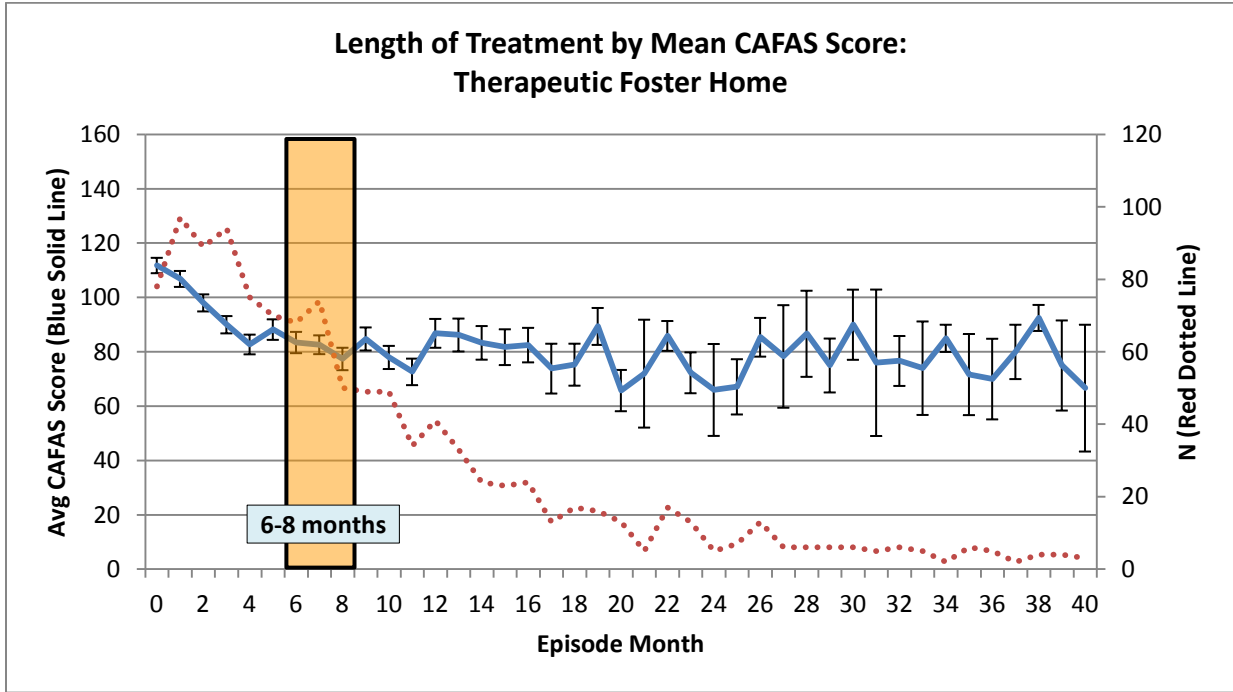
For Community-Based Residential III services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 5 and 6 months.

E. Therapeutic Group Home (TGH)



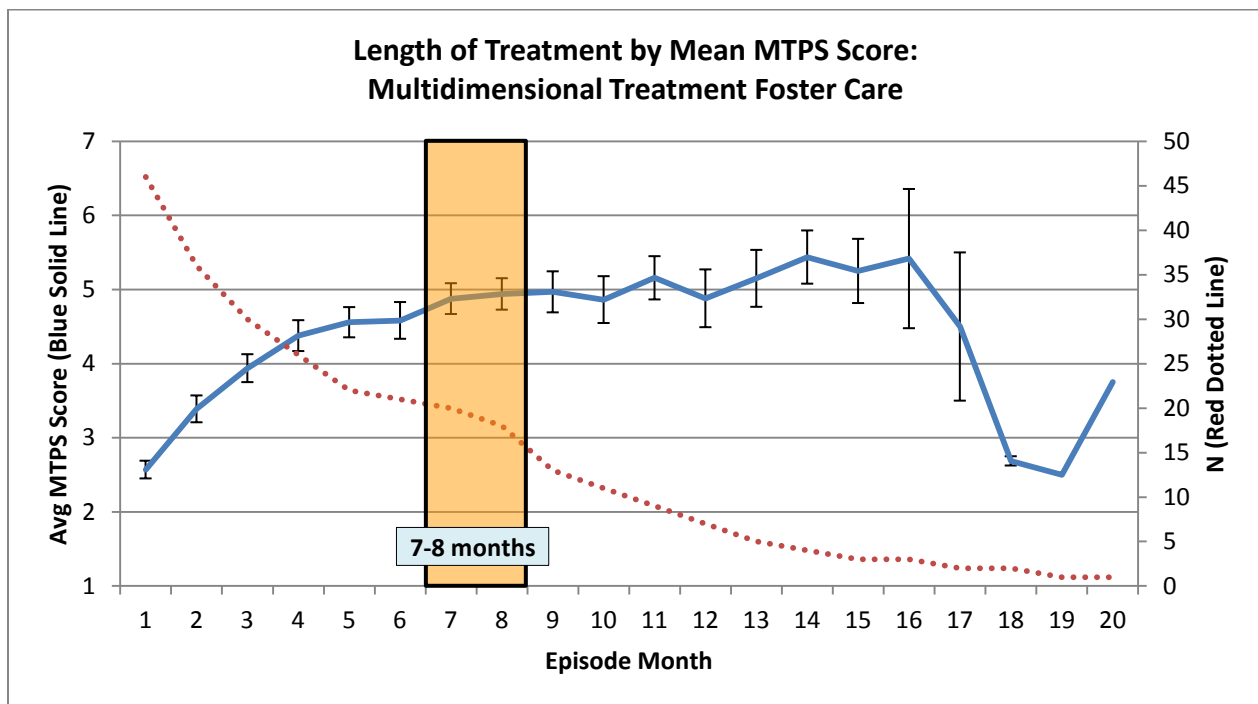
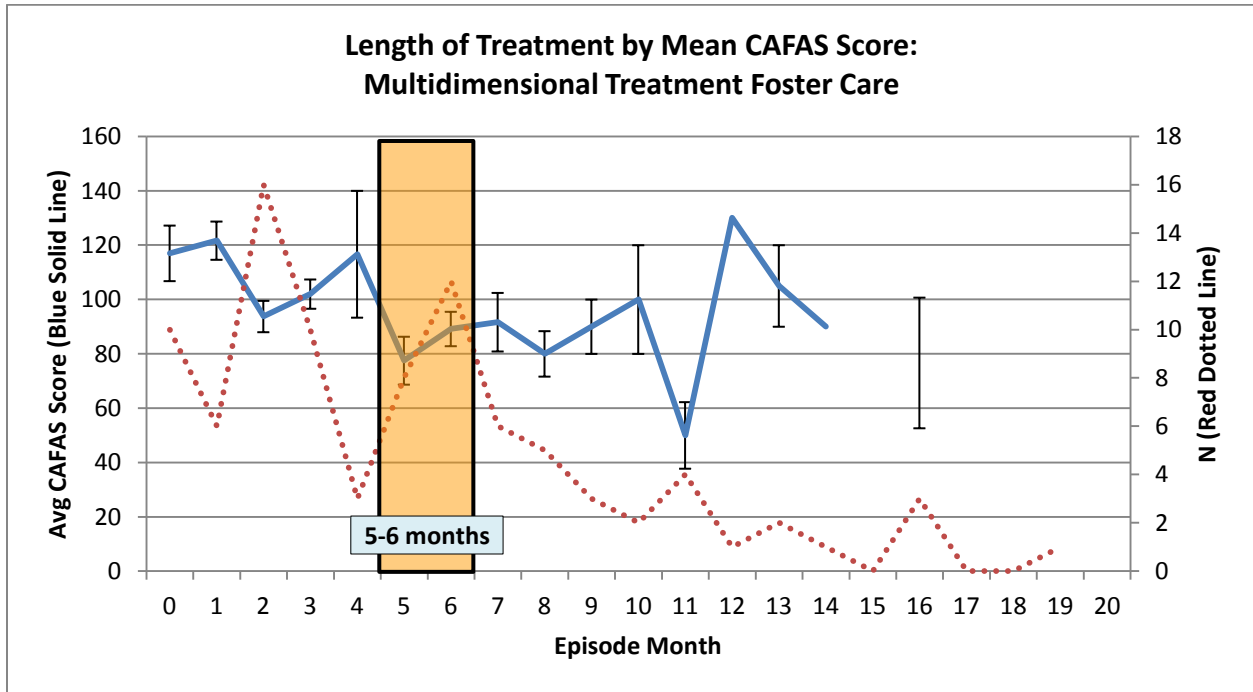
For Therapeutic Group Home Services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 5 and 7 months.

F. Treatment Foster Home (TFH)



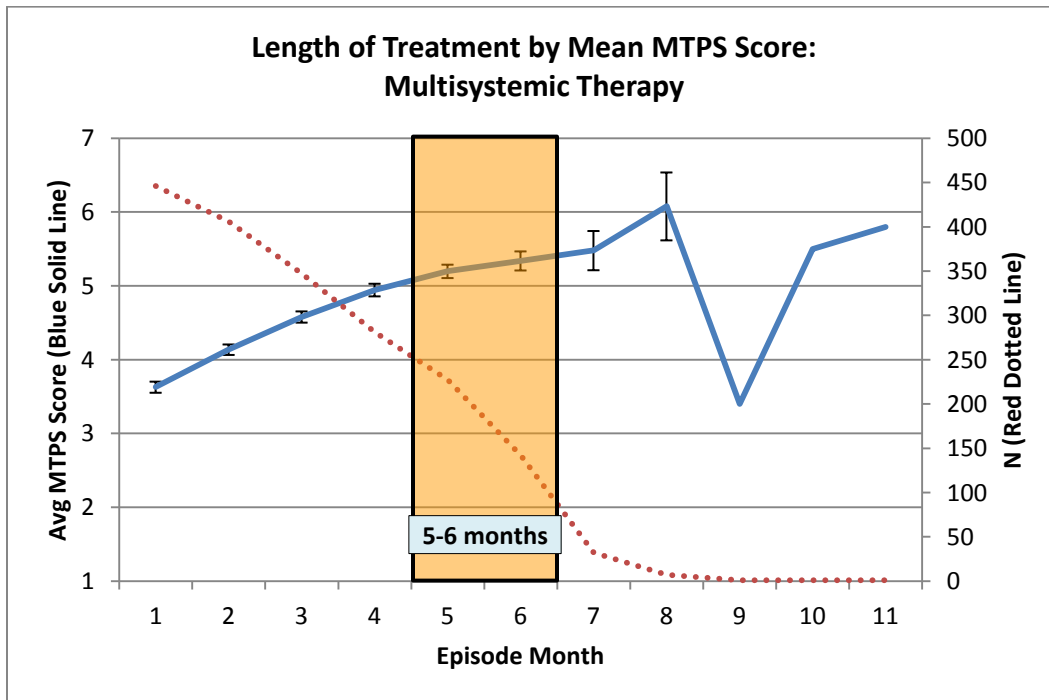
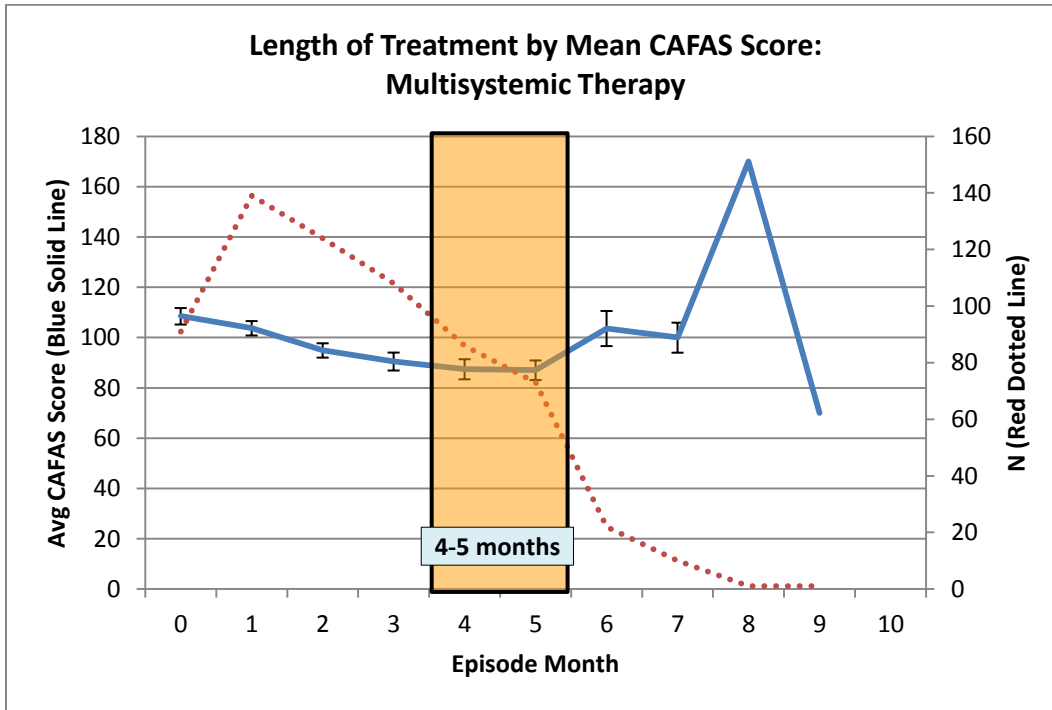
For Therapeutic Foster Home services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 6 and 8 months.

G. *Multidimensional Treatment Foster Care (MTFC)*



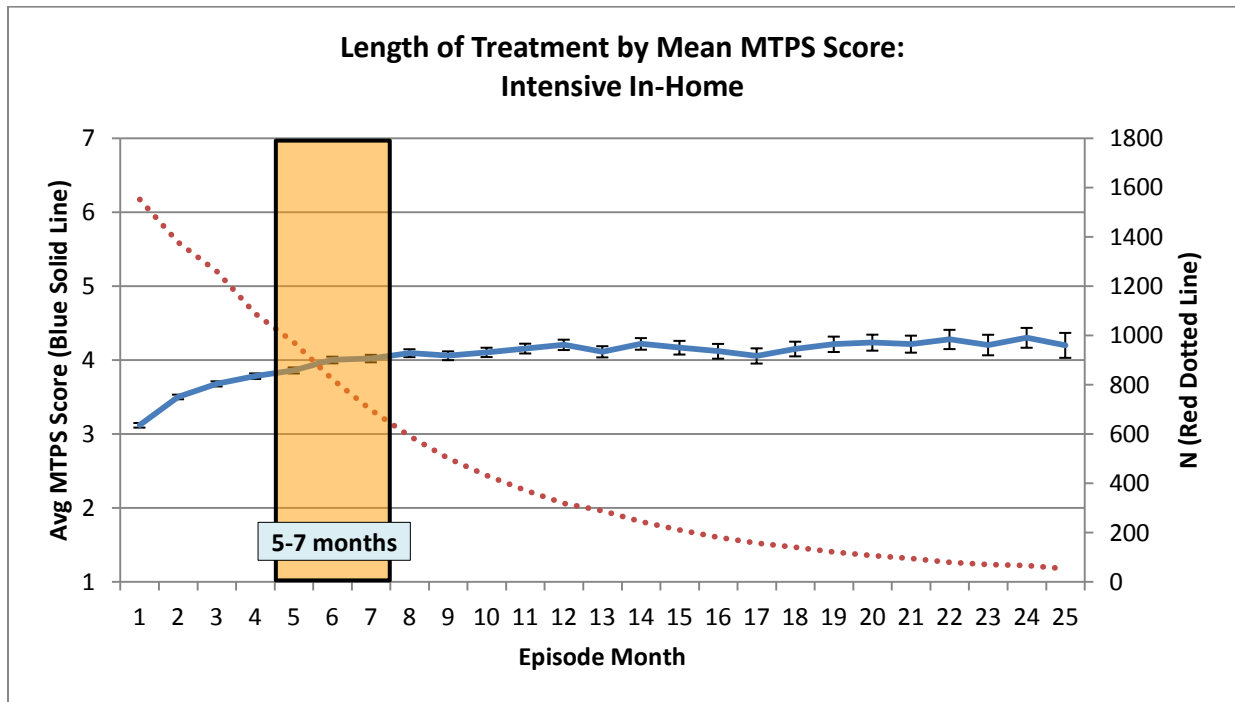
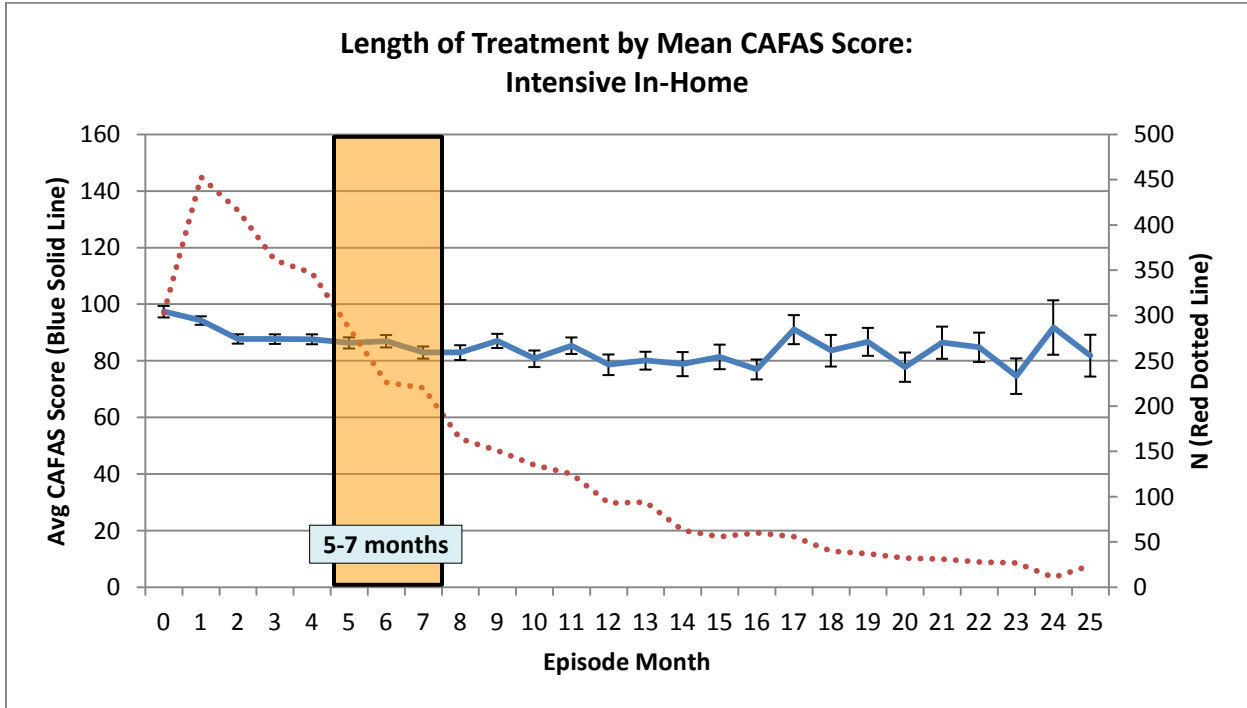
For Multidimensional Treatment Foster Care services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 5 and 8 months.

H. *Multisystemic Therapy (MST)*



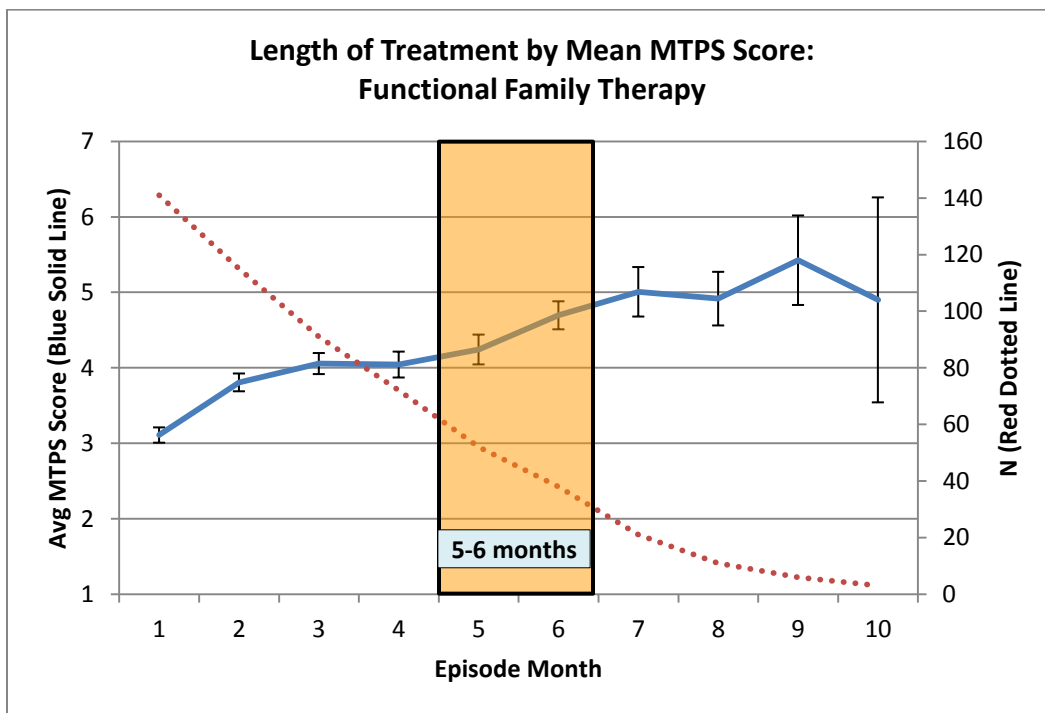
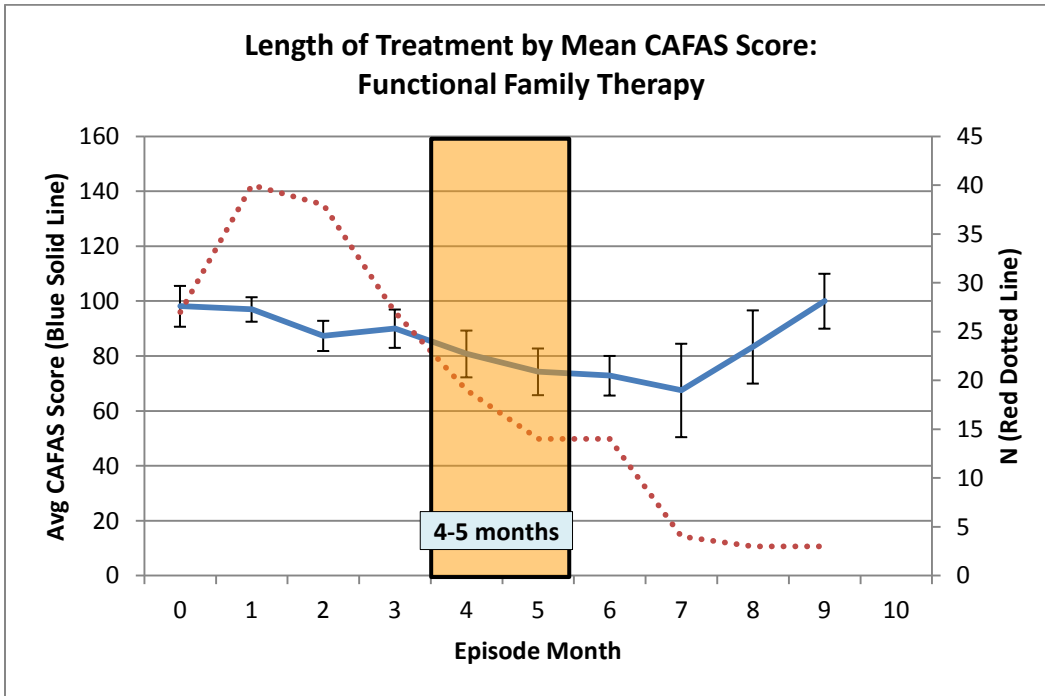
For Multisystemic Therapy services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 4 and 6 months.

I. *Intensive In-Home (IIH)*



For Intensive In-Home services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 5 and 7 months.

J. *Functional Family Therapy (FFT)*



For Functional Family Therapy services, a majority of youth showed maximum improvement on both the CAFAS and MTPS between 4 and 6 months.

IV. Limitations

The recommendations suggested by this analysis have some limitations which must be taken into consideration. First, the determination of where the ranges begin and end (the ‘orange’ windows in each graph presented above) – i.e., where the data show “diminishing returns” to the rate of improvement – are not selected based on statistical significance. They are based on: a) a *visual examination* of where improvement appears to level off or ‘plateau’ as indicated by CAFAS and MTPS scores and b) using the frequency distribution to determine the timeframe after which only a minority (less than 50%, but most often a much lower percentage) of youth showed improvement beyond the range. The results were also shared with the Orange Book development committee for feedback on the placement of the ranges. However, the decisions on where the suggested ranges begin and end were largely subjective ones. Therefore, one must be careful not to infer that the ranges presented in this analysis are in any way *definitive indicators* when treatment should be completed.

Recognizing this methodological shortcoming, it has been suggested to the staff at CAMHD that these ranges only be used as *guides* to when providers should reassess the youth they are serving, and not used as mandates for when a youth should be discharged from a treatment program. It is certainly possible that some youth might continue to benefit from treatment and should, therefore, continue that current treatment. The data presented here serve only as a guide to when Care Coordinators should revisit a youth’s progress to be confident that the decision to either continue treatment or discharge a youth from treatment is the appropriate decision for that particular youth.

In addition, as of yet, there has been no examination of improvement trajectories by diagnosis or baseline severity of symptoms. These may also be important factors in the rate at which youth improve and benefit from specific levels of care (Nofhle et al., 2010).

Also, some levels of care only serve small numbers of youth on a monthly basis (e.g., MTFC), so only small sample sizes were available for those analyses. This means that looking at the impact of a variable such as length of treatment in some levels of care may not be meaningful. As a result, more confidence should be placed on those levels of care that have a sufficiently large sample size (e.g., Intensive In-Home).

Finally, the youth that are a part of this analysis includes a wide spectrum of cases regarding their discharge status. That is, both successful and unsuccessful discharges are included in this analysis. So, at this point in time, our analysis cannot speak to whether or not discharge status could impact the relationship between length of stay and youth progress in the mental health system.

V. Future Directions

The analysis and findings described in this report are an initial step at exploring how length of treatment in a particular level of mental health care is related to youth progress. Future analyses should attempt to address some of the limitations of this study, including: 1) incorporating statistical techniques to determine significance of changes in outcome trajectories over time, 2) examining how differences in youth characteristics such as baseline severity, diagnosis, and treatment characteristics affect outcome trajectories, 3) increasing the timeframe from which the sample is collected to increase the sample size, and 4) examining differences in trajectories between youth who are discharged successfully and unsuccessfully.

VI. References

- Butler, L., Little, L., & Grimard, A. (2009). Research challenges: Implementing standardized outcome measures in a decentralized, community-based residential treatment program. *Child Youth Care Forum, 83*, 75-90.
- Green, J., Kroll, L., Imrie, D., Frances, F., Begum, K., Harrison, L., & Anson, R. (2001). Health gain and outcome predictors during inpatient and related day treatment in child and adolescent psychiatry. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 325–332.
- Hoagwood, K., & Cunningham, M. (1992). Outcomes of children with emotional disturbance in residential treatment for educational purposes. *Journal of Child and Family Studies, 1* (2), 129-140.
- Hodges, K. (1998). Child and Adolescent Functional Assessment Scale (CAFAS). Ann Arbor, MI: Functional Assessment Systems.
- Hodges, K., Doucette-Gates, A., & Kim, C. (2000). Predicting service utilization with the Child and Adolescent Functional Assessment Scale in a sample of youths with serious emotional disturbance served by center for mental health service-funded demonstrations. *The Journal of Behavioral Health Services and Research, 27*, 47-59.
- Hodges, K., Doucette-Gates, A., & Liao, Q. (1999). The relationship between the Child and Adolescent Functional Assessment Scale (CAFAS) and indicators of functioning. *Journal of Child and Family Studies, 8*, 109-122.
- Hodges, K., & Kim, C.S. (2000). Psychometric study of the child and adolescent functional assessment scale: prediction of contact with the law and poor school attendance. *Journal of Abnormal Child Psychology, 28*, 287–297.
- Hodges, K., & Wong, M. (1996). Psychometric characteristics of a multidimensional measure to assess impairment: the Child and Adolescent Functional Assessment Scale (CAFAS). *Journal of Child and Family Studies, 5*, 445-467.
- Hussey, D., & Guo, S. (2002). Profile characteristics and behavioral change trajectories of young residential children. *Journal of Child and Family Studies, 11* (4), 401-410.
- Leichtman, M., Leichtman, M.L., Barber, C., & Neese, T. (2001). Effectiveness of intensive short-term residential treatment with severely disturbed adolescents. *American Journal of Orthopsychiatry, 71* (2), 227-235.
- Lewis, W. (1988). The role of ecological variables in residential treatment. *Behavioural Disorders, 13* (2), 98-107.
- Lyons, J., & McCulloch, J. (2006). Monitoring and managing outcomes in residential treatment: Practice-based evidence in search of evidence-based practice. *Journal of American Academy of Child and Adolescent Psychiatry, 45* (2), 247-251.
- Manteuffel B., Stephens R., & Santiago R. (2002). Overview of the National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program and summary of current findings. *Children's Services: Social Policy, Research, and Practice, 5*, 3–20.

- Moore, L., & O' Connor, T. (1991). A psychiatric residential centre for children and adolescents: A pilot study of its patients' characteristics and improvement while resident. *Child: Care, Health, and Development, 17*, 235-242.
- National Adolescent Perpetrator Network (1993). The revised report from the National Task Force on Juvenile Sexual Offending. *Juvenile & Family Court Journal, 44*, 1–120.
- Noftle, J., Cook, S., Leschied, A., Pierre, J., Stewart, S., & Johnson, A. (2011). The trajectory of change for children and youth in residential treatment. *Child Psychiatry Human Development, 42*, 65-77.
- Savas, S., Epstein, I., & Grasso, A. (1993). Client characteristics, family contacts, and treatment outcomes. *Child & Youth Services, 16 (1)*, 125-137.
- Scott, D. & Lorenc, L. (2007). A multi-tiered evaluation of adolescent therapeutic group homes. *Child Youth Care Forum 36*, 153-162.
- Sexton, T., & Turner, C. (2010). The effectiveness of Functional Family Therapy for youth with behavioral problems in a community practice setting. *Journal of Family Psychology, 24, (3)*, 339-348.
- Shapiro, J. P., Welker, C. J., & Pierce, J. L. (1999). An evaluation of residential treatment for youth with mental health and delinquency-related problems. *Residential Treatment for Children & Youth, 17(2)*, 33-48.
- Stevens, S., Ruiz, B., Baracamonte-Wiggs, C., & Shea, M. (2006). Intensive home-based treatment for children and adolescents: A promising alternative to residential and hospital care. *Child & Family Behavior Therapy, 28, (4)*, 39-58.
- Tulloch, A., Fearon, P., & David, A. (2011). Length of stay of general psychiatric inpatients in the United States: A systematic review. *Administration and Policy in Mental Health, 38*, 155-168.