PLL
Parenting with Love and Limits®

Research Plan for Quasi-Experimental Evaluation of Parenting with Love and Limits in Jackson County, Missouri

Version 1.1

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BACKGROUND

Parenting with Love and Limits (PLL) serves youth in Jackson County, Missouri who are referred to PLL as an alternative to residential treatment or who are transitioning from detention or residential treatment back to their families and communities.

The plan sets forth the structure for conducting a quasi-experimental program evaluation of Parenting with Love and Limits which will include both a community-based alternative to placement (ATP) program and a short term 90-day re-entry services model. Data from Hilltop Residential, where PLL has been implemented through the Jackson County Family Court with consultation and support from the Missouri Department of Youth Services (DYS), will be included.

Table 1: Projected Sample Size

Service Provider	Number of PLL Teams
Jackson County Family Court	2 PLL ATP Teams Up to 72 total youth per year
	1 PLL Re-entry Team Up to 30 youth per year

Because the sample size for PLL re-entry services is currently projected to be too small for a quasi-experimental study, the re-entry portion of this plan is tentative, dependent on the addition of a second re-entry team.

RESEARCH TEAM

The program evaluation will be conducted by Hornby Zeller Associates, Inc. (HZA), an independent research firm with extensive experience working with PLL and conducting outcome studies such as the assessment proposed here. The staff for the study will include:

Table 2: Research Team

Name	Role	Degrees
C. Lynn Kiaer	Project Manager and Research Lead Hornby Zeller Associates, Inc.	Ph.D. Applied Mathematics M.S. Operations Research
Bradley White	Senior Research Associate Hornby Zeller Associates, Inc.	Ph.D. Social Welfare C.A.S. Marriage and Family Therapy
Erin Arthur	Research Associate Hornby Zeller Associates, Inc.	M.A. Psychology of Investigation M.S. Criminal Justice
Andrew Choens	Data Analyst Hornby Zeller Associates, Inc.	M.S.W.
Ellen Souder	Clinical Director Parenting with Love and Limits	M.A., LPCC-S

PLL LOGIC MODEL

The overarching goal of the study is to conduct a quasi-experimental evaluation of the effectiveness of PLL ATP and re-entry services compared to other alternative-to-placement and re-entry services implemented in Jackson County, Missouri. The PLL Logic Model provides a theoretical and practical framework for the program and thus a guide for this evaluation. It describes logical linkages among the target population, resources, activities, outputs, and proximal (i.e. short-term) and distal (i.e. long-term) outcomes.

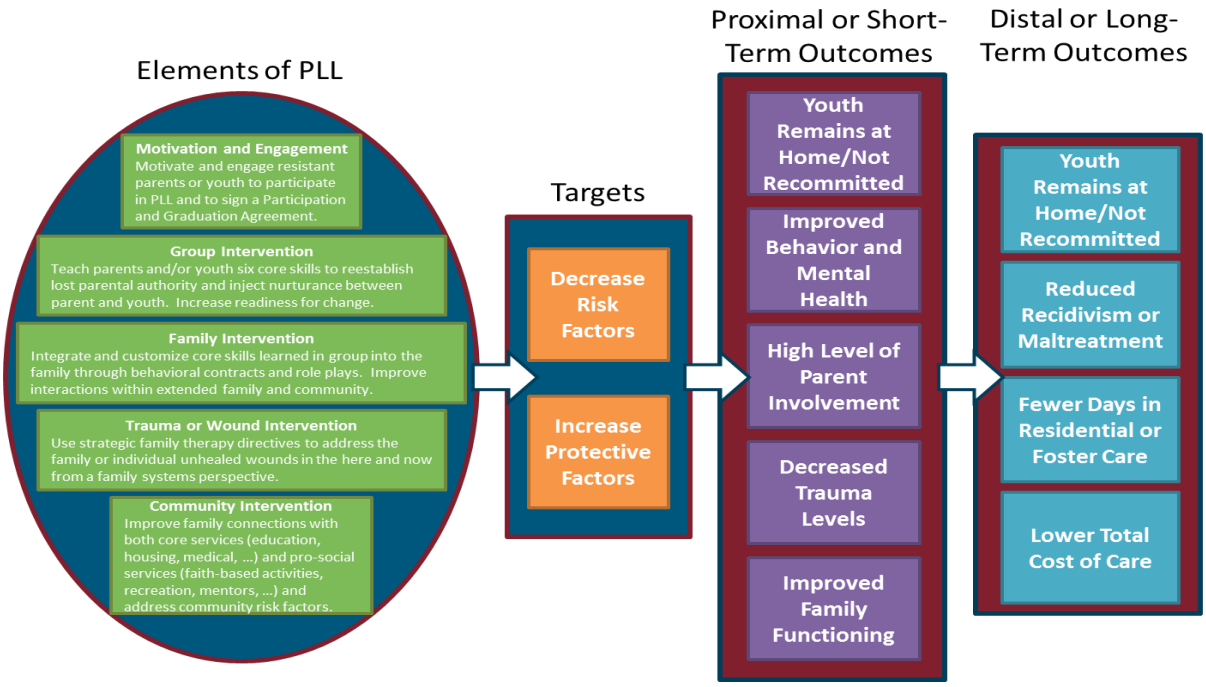

Figure 1: PLL Logic Model

The proximal and distal outcomes in the logic model drive the research design and methodology.

Proximal Outcomes

- Youth remains in the home
- Improved behavioral and mental health
- High level of parental involvement
- Decreased trauma levels
- Improved family functioning

Distal Outcomes

- Youth remains in the home
- Reduced recidivism
- Fewer days in residential
- Lower cost of care

RESEARCH QUESTIONS

RESEARCH QUESTIONS FOR ALTERNATIVE TO PLACEMENT (ATP)

Table 3: ATP Research Questions		
Number	**Question**	**Logic Model Outcome(s)**
Proximal Outcomes		
1	Does PLL achieve parental engagement and total family involvement with participation rates of 70% or greater among the treatment group?	High level of parental involvement
2	Does PLL decrease the number of placements or commitments into residential facilities as compared to the matched control group of youth not receiving PLL services?	Youth remains in the home
3	Does PLL decrease severe emotional and behavioral problems (Aggression, Hyperactivity, Bullying, Conduct Problems, Anxiety/Depression, Defiance, and Violence) as measured by the Child Behavioral Checklist (CBCL) among youth completing PLL Services vs. a matched control group?	Improved behavioral and mental health
4	Does PLL show statistically significant improvement in overall family functioning as measured by the Family Adaptability and Cohesion Effectiveness Scale IV (FACES) among youth completing PLL Services vs. a matched control group?	Improved family functioning
5	Does PLL increase parental and youth readiness to change among clients completing PLL services as measured by the PRS scale vs. a matched control group?	Improved family functioning
6	Does PLL decrease parental and youth levels of trauma as measured by the UCLA PTSD scale among youth completing PLL services?	Decreased trauma levels
Distal Outcomes		
7	Does PLL achieve significantly lower rates of re-offending (recidivism) in the 12 months after treatment for youth served as compared to a matched control group of youth not receiving PLL services?	Reduced recidivism
8	Does PLL achieve significantly lower rates of commitment to residential treatment in the 12 months after treatment as compared to a matched control group of youth not receiving PLL services?	Youth remains in the home

Table 3: ATP Research Questions		
Number	**Question**	**Logic Model Outcome(s)**
9	Does PLL lower the costs of care per child by reducing length of service and preventing placements to residential services?	Reduced length of service Youth remains in the home Lower cost of care

RESEARCH QUESTIONS FOR RE-ENTRY

Table 4: Re-entry Research Questions		
Number	**Question**	**Logic Model Outcome(s)**
Proximal Outcomes		
1	Does PLL achieve parental engagement and total family involvement with participation rates of 70% or greater among the treatment group?	High level of parental involvement
2	Does PLL achieve shorter lengths of stay as compared to a matched control group of youth not receiving PLL re-entry services?	Shorter length of service
3	Does PLL decrease severe emotional and behavioral problems (Aggression, Hyperactivity, Bullying, Conduct Problems, Anxiety/Depression, Defiance, and Violence) as measured by the CBCL among youth completing PLL services vs. a matched control group?	Improved behavioral and mental health
4	Does PLL show statistically significant improvements in overall family functioning as measured by FACES among youth completing PLL services vs. a matched control group?	Improved family functioning
5	Does PLL increase parental and youth readiness to change among clients completing PLL services as measured by the PRS scale vs. a matched control group?	Improved family functioning
6	Does PLL decrease parental and youth levels of trauma as measured by the UCLA PTSD scale among youth completing PLL services?	Reduced trauma
Distal Outcomes		
7	Does PLL achieve significantly lower rates of re-offending (recidivism) in the 12 months after treatment for youth served as compared to a matched control group of youth not receiving PLL services?	Reduced recidivism

Table 4: Re-entry Research Questions		
Number	**Question**	**Logic Model Outcome(s)**
8	Does PLL achieve significantly lower rates of re-commitments in the 12 months after treatment for youth served as compared to a matched control group of youth not receiving PLL services?	Youth remains in the home
9	Does PLL lower the costs of care per child by safely reducing the overall lengths of stay in residential services?	Lower cost of care

SAMPLE DATA AND EVALUATION COHORTS

DATA

A comprehensive data collection plan has been developed. The plan ensures that only data necessary to answer the research questions are collected. It is designed to maximize the quality of the evaluation, minimize and justify the time and cost necessary to perform the study, and increase the strength of the key findings and recommendations by ensuring that threats to valid results are minimized.

DATA EVALUABILITY ASSESSMENT

Dr. Pamela Behle provided a data sample for the evaluability assessment. Based on the sample provided, the specific data that will be used in the evaluation have been identified. Note that the charge code can be parsed to obtain felony/misdemeanor information.

Table 5: External Data from Jackson County Family Court

Field	Type of Data	Description/Purpose
Demographic		
ID	Alphanumeric	To connect data from multiple sources to a single individual
Date of Birth	Date	To calculate age at various events
Race	Categorical	Matching
Sex	Categorical	Matching
Risk Assessment		
Age at 1st Referral	Categorical	Matching
Prior Referrals	Categorical	Matching
Assault Referrals	Categorical	Matching
History of Placement	Categorical	Matching
Peer Relationships	Categorical	Matching
History of Child Abuse/Neglect	Categorical	Matching
Substance Abuse	Categorical	Matching
School Attendance/Disciplinary	Categorical	Matching
Parental Management Style	Categorical	Matching
Parental History of Incarceration	Categorical	Matching
Formal Charge History		
File Date	Date	Recidivism question
Charge Code	Numeric	Recidivism question
Charge Code Description	Text	Recidivism question
Charge Disposition Code Description	Text	Recidivism question
Charge Disposition Date	Date	Recidivism question

Table 5: External Data from Jackson County Family Court		
Field	**Type of Data**	**Description/Purpose**
Juvenile Residential and Field Assignment		
Facility/Program ID	Text	Residential commitment questions
Agency ID	Text	Residential commitment questions
Start Date	Date	Residential commitment questions
End Date	Date	Residential commitment questions
Outcome Code	Text	Residential commitment questions

In addition to the data shown in Table 5, Dr. Behle is working with the Jackson County Probation Department to have the CBCL, FACES and Readiness to Change measures administered to a large proportion of probation youth at the beginning and end of probation. These measures will be matched to the data shown in Table 5 using the youth's ID. The raw data for these measures will be forwarded to the research team at HZA.

All the remaining data necessary for the study are secondary data which will be obtained from the PLL treatment teams.

COHORTS

Each PLL program (ATP and re-entry) will involve two cohorts: the treatment group (PLL) and the control group (youth in the Jackson County Family Court system who did not receive PLL services). The cohorts are described in terms of ATP services; the process for re-entry services is completely parallel.

Treatment Cohort

HZA proposes to compare youth who receive PLL ATP services with similar youth who do not receive PLL services.

Eligibility for services is defined as any juvenile justice or mental health client between the ages of 10 and 18 years on probation services

- for whom a caregiver is available, and
- who has not exhibited moderate to severe sexually aggressive behaviors or active psychosis.

The PLL treatment cohort will consist of all youth who receive PLL ATP services during the period of the study, and who have a full year after the end of treatment in order to calculate recidivism and/or recommitment rates. All youth and families referred to PLL will be tracked, regardless of program completion, to document program attrition rates and outcomes.

Comparison Cohort

The comparison group will be drawn from the pool of all probation youth eligible but not referred for PLL services during the same time period or, if needed, youth who would have been eligible for PLL services in the years immediately preceding the introduction of PLL in the community. As with the treatment group, the pool of youth eligible for assignment to the comparison group must have a full year of data available after their treatment is completed. The comparison group will be similar in size to the treatment group.

PROPENSITY SCORE MATCHING

Propensity score methods are used to construct a matched comparison cohort in settings where the means of selecting subjects for the treatment group is not random, and/or where the treatment group is not large enough to ensure that it is representative of the target population as a whole.

To ensure a statistically valid matching between the treatment and comparison groups, the pool of youth from whom the comparison cohort is drawn should be three to five times the size of the treatment group, or even larger, if possible.

The matching criteria to be used in this evaluation are identified in Table 5, together with characteristics calculated from that data, such as age at current referral. They include demographic and risk-related characteristics of the youth or their families. While traditional matching is generally only possible using a limited number of criteria, propensity score matching uses logistic regression to identify youth who are similar to those in the treatment group, and is not limited in the number of characteristics that can be included.

METHODS AND MEASURES

The effectiveness of a juvenile justice program is typically reflected by the degree to which the intervention facilitated the prevention of further delinquent acts by the youth served. The expectation of the interventions is that they address cognitive, behavioral and social factors, or criminogenic risks and needs, thereby reducing the likelihood for future delinquent behaviors and justice system involvement.

The proposed evaluation will include both short-term (during the course of treatment) and long-term (one year after treatment ends) measures of program effectiveness. The short-term measures primarily involve pre- and post-tests to examine outcomes (changes in CBCL, FACES, Readiness for Change results) for youth receiving PLL vs. those that are not receiving service. The short-term measures also include graduation rates and pre- and post-test results on the UCLA PTSD index, both of which involve only the treatment group. For re-entry, length of the current residential commitment is also a short-term outcome.

Long-term measures will examine lengths of stay and juvenile justice and recidivism outcomes of PLL youths compared to youth receiving non-PLL re-entry services. They will also look at the budgetary impact of PLL by monetizing any reductions in length of stay while taking the cost of PLL into account.

In all cases, in addition to the tests involving means, medians and variances that are detailed below, statistically significant results will be evaluated for effect size. Raw effect size, standardized effect size (Cohen's *d*) and relative risk will be used, as appropriate, to assess the clinical significance of the differences observed.

SHORT-TERM MEASURES

The study will examine internal outputs and outcomes for the youth completing PLL re-entry services. These measures will specifically addresses ATP research questions 1-6 (re-entry research questions 1-5).

Graduation Rates

In order to graduate from PLL, the youth and family must:

- Attend and participate in at least 5 group therapy sessions
- Attend and participate in at least 6 family coaching sessions
- Remain at home with no curfew violations or running away
- Remain in school with no reports of truancy or failing grades
- Stay out of trouble with no reports of law violations or problems at home

- Stabilize any mental health issues

Youth who do not meet these standards are identified as non-completers. PLL program attendance will be tracked for all youth and their families admitted to and released from the program during the study period. The sample will include both non-completers and completers, to adequately evaluate attrition rates and differences between those who successfully engage in the program and those who do not. The graduation rate is calculated by dividing the number of youth who meet the graduation criteria by the number of youth enrolled in PLL less those still in treatment. Youth who leave the program for reasons beyond the control of the PLL treatment team, such as families that move out of the jurisdiction, are not counted in the graduation rate calculation. This measure addresses ATP and re-entry research question 1.

For additional insight into graduation rates and if the sample size is large enough, the rates for various sub-populations (for example, boys vs. girls, whites vs. non-whites or blacks vs. non-blacks, violent offenders vs. non-violent offenders) are compared using Welch's t-test for two proportions.

Commitment During Treatment

The Juvenile Residential and Field Assignment Data will be used to identify residential placements that occur during PLL treatment (for PLL youth) and during probation (for all youth). Commitment rates will be compared between the treatment and control groups using Welch's t-test for two proportions. This measure addresses ATP research question 2.

For additional insight into commitment rates and if the sample size is large enough, the rates for various sub-populations (for example, boys vs. girls, whites vs. non-whites or blacks vs. non-blacks, violent offenders vs. non-violent offenders) are compared using Welch's t-test.

Length of Stay

In order to evaluate the extent to which PLL services result in reductions to lengths of stay for youth served, HZA will compare the mean and median lengths of stay of youths completing PLL to those in the comparison group.

Length of stay for an individual youth will be measured by calculating the number of days between admission to and release from the program. Differences in the mean length of stay will be evaluated using a t-test, while differences in the median will be evaluated using the Wilcoxon Signed Rank test.

This measure addresses re-entry research question 2.

Child Behavior Checklist

The extent to which the PLL program reduces severe emotional and behavioral problems among youths served is measured using the Child Behavior Checklist (CBCL). The CBCL is a validated, standardized assessment instrument that measures behavioral problems and social competencies of children as reported by parents. The CBCL can be self-administered or administered by an interviewer. It consists of 112 items related to emotional and behavior problems that are scored on a 3-point scale ranging from "not true" to "often true" of the child.

The CBCL is administered to youths' parents or caregivers prior to the start of services and again at the conclusion of PLL treatment. The Jackson County Probation Department will administer the assessment to the parents or caregivers of probation youth at the start and end of probation. The CBCL provides measures on scales including:

- Externalizing Behaviors
  - Aggressive Behaviors
  - Rule Breaking
- Internalizing Behaviors
  - Somatic Complaints
  - Withdrawn
  - Anxious
- Social Problems
- Attention Problems
- Thought Problems
- Conduct Disorder
- Oppositional Defiant Behavior

Pre- and post-test CBCL data will be evaluated using paired t-tests to determine whether youth receiving PLL re-entry services experienced significant clinical reductions in each of the CBCL scales. Paired t-tests will also be used to determine what changes occur for non-PLL youth. Finally, to assess differences between the two groups with respect to these scales, HZA will use ANOVA. This analysis addresses ATP and re-entry research question 3.

Family Adaptability and Cohesion Effectiveness Scale IV

Family functioning is assessed using the Family Adaptability and Cohesion Effectiveness Scale IV (FACES). One of the key theoretical underpinnings of PLL is family structure theory[1], and, indeed, PLL is designed to change the structure of the family by increasing parental authority while establishing flexibility and fostering connectedness between family members. FACES is administered to both youth and at least one parent at the beginning and end of PLL treatment; the Jackson County Probation Department will be administering the assessment similarly at the beginning and end of probation.

[1] Minuchin, S. (1974). *Families and Family Therapy*. Harvard University Press.

FACES measures adaptability on a scale that ranges from rigid through structured and flexible to chaotic, and cohesion on a scale that ranges from disengaged through separated and connected to enmeshed. A goal of PLL is to move family members away from the extreme values. This measure addresses ATP and re-entry research question 4.

Because the goal with respect to FACES is not to increase or decrease adaptability and cohesion, but rather to avoid extremes, the statistical test used is Levene's test for equality of variances. Reducing the variance in the responses means that the responses are closer to the mean.

Readiness to Change

Family motivation to change is assessed using the Parent and Adolescent Readiness Survey (PRS), a modified version of the University of Rhode Island Change Assessment (URICA) instrument.[2] The PLL treatment approach is in part based upon the Transtheoretical Model of Behavior Change[3] which assesses family readiness for change and provides steps for achieving healthier behaviors. Both parents and adolescents receiving PLL services will complete the PRS independently at three points during treatment. This assessment measures readiness to change relative to the following Prochaska and DiClemente's Stages of Readiness: Precontemplation, Contemplation, Action and Maintenance.

Each response on this assessment is associated with a particular stage of readiness; a result includes the total for each stage, and an overall score. There are two common patterns of response that reflect positive change in this measure. One pattern shows the dominant phase moving from Precontemplation toward Contemplation, Action, or even Maintenance. The other pattern shows high totals in multiple stages on the pre-test, followed by a mid- or post-test that shows a dominant stage, often the Action phase. In this case, movement of the overall score is less meaningful. The mean and variance is calculated from the raw responses for each administration of the test.

Because of the complexity of response patterns, this assessment is analyzed using both the Welch's t-test for proportions in examining the changes in the overall score, and using Levene's test for equality of variances to capture the positive impact in the second pattern.

This measure addresses ATP and re-entry research question 5.

[2] DiClemente, C.C., and Hughes, S.O. (1990) Stages of change profiles in alcoholism treatment. *Journal of Substance Abuse*, 2, 217-235. McConnaughy, E.A., Prochaska, J.O., Velicer, W.F. (1983). Stages of change in psychotherapy - measurement and sample profiles. *Psychotherapy: Theory, Research and Practice*, 20(3), 368–375.

[3] Prochaska, J.O., Butterworth, S., Redding, C.A., Burden, V., Perrin, N., Leo, M., Flaherty-Robb, M., & Prochaska, J.M. (2008). Initial efficacy of MI, TTM tailoring and HRI's with multiple behaviors for employee health promotion. *Preventative Medicine*, 46(3), 226–31. Prochaska, J.O. & DiClemente, C.C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, 51(3), 390-395.

UCLA Post-Traumatic Stress Disorder Reaction Index

The University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA-RI) is one of the most widely used instruments for the assessment of traumatized children and adolescents. Both the Adolescent and Parent's Report versions are administered at the start of treatment and again at the end.

Questions match the DSM-IV criterion. Although the instrument was not designed to make a formal diagnosis, it can provide preliminary diagnostic information. In Part I, a brief review of the traumatic experience sets the stage for the subsequent questions and helps the child recall details of the traumatic event (Criterion A1). Part II includes questions related to A1 and A2 criteria which are scored "yes" or "no." Part III asks about the frequency of PTSD symptoms during the past month (rated from 0=none of the time to 4=most of the time). These items map directly onto the DSM-IV PTSD criterion B (intrusion), criterion C (avoidance / numbing), and criterion D (arousal). Twenty of these items assess PTSD symptoms; two additional items assess associated features: fear of recurrence and trauma-related guilt.

The pre- and post-tests will be compared using a paired t-test to assess whether the reaction index has gone down in the course of treatment.

This measurement addresses ATP and re-entry research question 6.

DISTAL MEASURES

Recidivism

Recidivism will be evaluated for the juvenile justice youth in terms of subsequent offending following release from treatment or comparison services. The definition used to assess recidivism outcomes, following program release, is:

> Any subsequent adjudication for a delinquent offense occurring within 12 months of release from the treatment or comparison program.

This measure of recidivism is a standard operational definition used in the field to evaluate juvenile justice interventions. Re-arrests rates present an alternative definition, but are less reliable indicators of reoffending given that many arrests fail to result in formal charging or adjudication. Re-adjudication is considered a more reliable indication that a youth has committed a subsequent offense. Welch's t-test will be used to evaluate whether the PLL youth have a lower recidivism rate than do youth in the matched control group.

Recidivism outcomes will be further categorized in terms of the adjudication offense type (e.g., felony, misdemeanor, status offense). This measure addresses ATP and re-entry research question 7.

Commitment and Re-commitment Rates

Commitment to detention or residential treatment reflects a prevention failure for the system. HZA will count the number of youth who are detained and those who are committed for detention and treatment separately in evaluating commitment or re-commitment rates.

Commitment rates will be compared using Welch's t-test for proportions.

This measure addresses ATP and re-entry research question 8.

Cost of Treatment

Budgetary restrictions make the cost effectiveness of any program an important consideration. One of the collateral impacts of PLL's short length of service and reduction in commitments or re-commitments to residential treatment is typically a reduction in the total cost of treatment. The cost of treatment of PLL youth, including any subsequent probation or residential treatment, is compared to that of the matched control group. This measure addresses ATP and re-entry research question 9.

NUMBER OF AND TIME REQUIRED BY EACH YOUTH

The research study proposed here does not involve human subjects directly and only involves analysis of secondary, de-identified data to be provided to HZA by PLL and Jackson County Family Court.

CONFIDENTIALITY PROVISIONS

As stated previously, human subjects will not be involved in the evaluation. The study design is a retrospective, quasi-experimental design whereby the population of youth served by PLL during the study period will be matched retrospectively to a comparison cohort of clients who received standard, non-PLL re-entry services and had no exposure to PLL.

HZA will work with Jackson County Family Court to obtain data extracts of comparison youth for matched selection in the study. HZA will provide an unduplicated Excel or SPSS file of all clients served by PLL during the study period, identifying completers and non-completers, so that Jackson County Family Court can mark these youth appropriately in the data extracts. Jackson County Family Court will then de-identify client records for PLL youth and those meeting comparison cohort criteria (see below), making it impossible to determine the actual identity of any individual clients.

HZA will then use this file to match the de-identified comparison cohort population to the PLL treatment cohort on key variables as shown in Table 5. HZA will use propensity score matching in the analysis phase of the study to control for differences in the propensity or likelihood for inclusion in the treatment versus comparison cohort. In addition, a post hoc multivariate, expected recidivism logistic regression model will be calculated to control for study subject differences in the matching variables as outlined above.

Non-PLL youth are eligible for the comparison cohort provided they are in the Jackson County Family Court system as long as they meet the eligibility criteria for inclusion in the PLL treatment group, but have not had any exposure to PLL.

AMOUNT OF JACKSON COUNTY STAFF TIME

The amount of Jackson County research staff time needed for the study should be minimal. Similar studies have been conducted in a number of other states and in each instance agency staff time has been limited, devoted solely to pulling the sample and follow-up outcome extracts from the agency information system.

The Jackson County Probation Department personnel will incur some time demands due to collecting CBCL, FACES and Readiness to Change responses from probation youth and parents.

BENEFIT TO JACKSON COUNTY COURT AND JUVENILE JUSTICE/MENTAL HEALTH FIELD

The National Council on Crime and Delinquency, in its final report[4] to the federal Office of Juvenile Justice and Delinquency Prevention, underscored the lack of definitive evaluations on the effectiveness of re-entry and aftercare programs for at-risk and delinquent youth. The authors noted that their project "called attention to an area that traditionally has received short shrift from policymakers and practitioners alike: how best to ensure successful transition and reintegration of high-risk juvenile offenders into the community" (p. 1). The evaluation described herein will help to overcome that deficit.

[4] National Council on Crime and Delinquency (2005). *Implementation and Outcome Evaluation of the Intensive Aftercare Program*. Washington, DC: Office of Justice Programs.