

FACTORS INFLUENCING FAMILY INVOLVEMENT IN MENTAL HEALTH  
TREATMENT FOR CHILDREN WITH SEVERE EMOTIONAL DISTURBANCES

By

LINDSAY F. SATTERWHITE

Thesis

Submitted to the Faculty of the  
Graduate School of Vanderbilt University  
in partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE

in

Community Research & Action

May, 2010

Nashville, Tennessee

Approved:

Professor Craig Anne Heflinger

Professor Marybeth Shinn

## ACKNOWLEDGEMENTS

Preparation of this article was supported by the National Institute for Mental Health (R01MH070680). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the funding agencies. Special thanks to Professor Marybeth Shinn and Professor Michael Ezell for their guidance and mentorship with this paper.

# TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS: .....	ii
LIST OF TABLES.....	iii
LIST OF FIGURES .....	v
Chapter	
<u>I.</u> INTRODUCTION.....	1
<u>II.</u> METHODS.....	7
Sample .....	8
Measures .....	8
<i>Child Factors</i> .....	9
<i>Family Factors</i> .....	9
<i>Service System Factors</i> .....	10
<i>Community Factors</i> .....	11
<i>Family Involvement</i> .....	12
Analyses.....	12
<u>III.</u> RESULTS .....	14
Bivariate Analyses.....	14
Multiple Regression Analyses.....	14
<i>Model 1: Child Predictors</i> .....	14
<i>Model 2: Family Predictors</i> .....	16
<i>Model 3: Service System Predictors</i> .....	18
<i>Model 4: Community Predictors</i> .....	18
<i>Model 5: All Predictors</i> .....	19
<u>IV.</u> DISCUSSION .....	22
REFERENCES .....	25

## LIST OF TABLES

Table		Page
1.	Sample Summary Statistics: Subdivided into Unacceptable and Acceptable Ratings of Family Involvement-----	15
2.	Multiple Regression Models of Child, Family, Service System, and Community Level Factors on Family Involvement-----	17
3.	Probability of Having Acceptable Family Involvement: The Influence of Race, Adult Health, and Quality of the Service System-----	21

## LIST OF FIGURES

Figure	Page
1. Conceptual Model -----	4
2. Case Review Rating Descriptions; Adapted from Human Systems and Outcomes, Inc (1998) -----	13
3. The Probability of Having Acceptable Family Involvement: Effects of Caregiver Health by Quality of Service System -----	20



## CHAPTER I

### INTRODUCTION

Children and adolescents with severe emotional disturbances (SED) require care that cannot be provided by the mental health system alone; children with SED receive services from the schools, the community, and occasionally the juvenile justice system (Stroul & Friedman, 1986). These elements are often integrated into a system of care (SOC). A SOC is best understood as a philosophical approach to mental health service delivery in which numerous, previously separate, services strive to work together collaboratively to meet the needs of children with SED and their families. Research has established the importance of family involvement in improving treatment outcomes for this population (Bickman, Foster & Lambert, 1996; Brannan & Heflinger, 2007; Foster, Saunders, & Summerfelt, 1996; Richards et al., 2008); however, little is known about what factors may influence the level of family involvement in the treatment process.

Prior to the development of the systems of care philosophy, and its implementation in numerous states, children with SED were often in overly restrictive settings, and most children were not receiving the services they needed (Stroul & Friedman, 1986). Thus, the purpose of SOCs is twofold: improve outcomes for children with SED and keep children in the least-restrictive environments required for their care. SOCs for children with SED and their families have been funded by the Substance Abuse and Mental Health Services Administration and have been widely adopted; the concept of getting service providers to collaborate with each other, and with the family, to develop a relevant and comprehensive treatment is appealing. However, one

criticism of many SOC's is that they fail to emphasize the involvement of family members, specifically primary caregivers (Brannan, Heflinger, & Foster, 2003; Measelle, Weinsten, & Martinez, 1998). Although often poorly realized, family involvement is critically important to systems of care. Brannan (2003) asserts that attention to family influences is crucial to improving the effectiveness of treatments in community and service system settings.

Specifically, the primary caregivers of children with severe emotional disturbances have been shown to profoundly affect treatment and outcomes. Caregiver strain significantly impacts children's use of mental health services (Brannan & Heflinger, 2007). Family factors and caregiver characteristics have consistently been shown to have effects on receiving more restrictive services (Bickman, Foster & Lambert, 1996; Brannan & Heflinger, 2007; Foster, Saunders, & Summerfelt, 1996), having longer lengths of stay (Foster, 1998), incurring higher costs of care (Brannan, Heflinger, & Foster, 2003), higher severity of symptoms and low coordination with service providers (Yatchmenoff, Koren, Friesen et al., 1998). Still, there has been concern that many SOC's are not effectively involving families (Cook & Kilmer, 2004; Koroloff & Friesen, 1990). Despite these findings, research has not fully explored which factors support or impede family involvement in children's mental health treatment.

Contributing to the lack of research on factors of influencing family involvement is the absence of a consistent definition. Family involvement has been inconsistently defined and operationalized in the literature. For the purposes of this study, which aims to understand what factors affect family involvement in mental health treatment, family involvement will be conceptualized using Curtis and Singh's (1996) four part definition: "involvement of families in all aspects of services at all times, education of the family about the nature of services and how



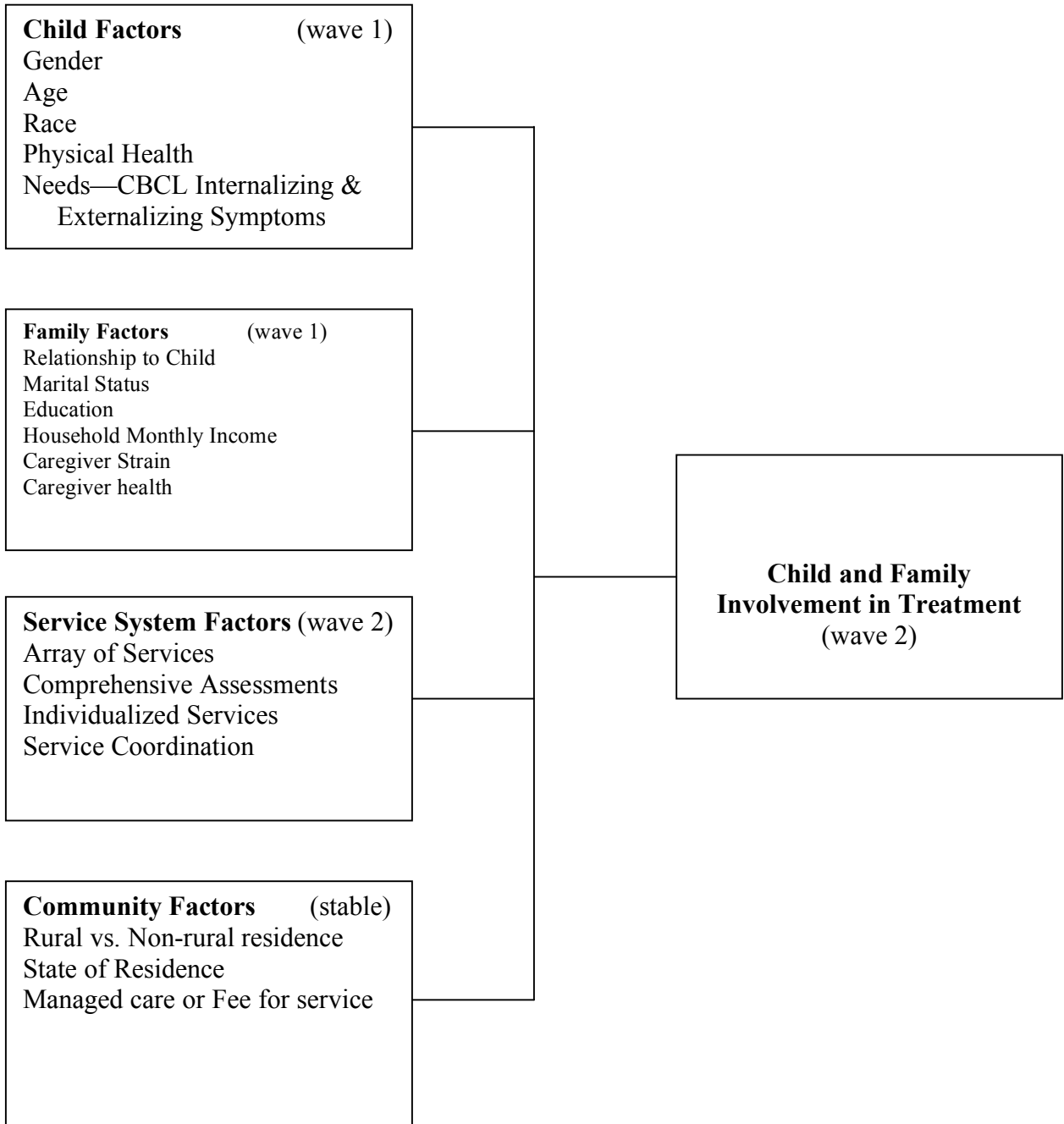
the service system works, involvement of the family in decision-making, and keeping the family informed on the process and progress of treatment” (p. 505).

Most attempts to measure parental involvement are based on reports by service providers (Baker, Blacher, & Pfeiffer, 1993), or parents/caregivers, or children (Hawley & Weisz, 2005; Israel, Thomsen, Langeveld, & Stormack, 2007; Robinson, Kruzich, Friesen, Jivanjee, & Pullman, 2005), or on a set of observed behaviors (Richards et al., 2008). There is one published psychometrically sound scale to rate family involvement, based on caregiver reports (Curtis & Singh, 1996). Each of these methodologies is biased in specific ways. For instance, providers may be likely to report family involvement with unconscious bias against specific demographic or cultural characteristics of the family (Baker et al., 1993), or to conflate family involvement with treatment outcomes (i.e. blaming family members when a child’s treatment is not proceeding as expected). Self-reported accounts of family involvement, taken from caregivers, have demonstrated bias in previous studies as well. Curtis and Singh (1996) found that caregivers with more years of education reported having lower levels of family involvement. The authors suggest that respondents with higher levels of education have higher expectations for their level of involvement and so under-appreciate and underreport their level of involvement as compared to respondents with lower levels of academic achievement. Finally, measures of family involvement that focus only on behaviors (Richards et al., 2008) overlook an important aspect of the definition of family involvement, that families be kept informed by the service system. These results highlight the importance of obtaining reports of family involvement from numerous sources: the family members, the child, and the providers.

Aday and Andersen (1974, 1981; Andersen & Davidson, 1996) developed a conceptual model, in which individual (child), family, service, and community characteristics have enabling

and predisposing effects on service use and outcomes. A similar model (as depicted in Figure 1) applied to family involvement suggests that child, family, service system, and community factors

Figure 1: Conceptual Model



may influence family involvement in children's mental health treatment. Previous studies on family involvement have focused on child and family specific socio-demographic or treatment related characteristics, such as: severity of child's symptoms, child's race, gender, and age, caregiver's levels of reported strain, caregiver educational attainment, and family income. Some service system characteristics have been examined as well, including whether the treatment setting is residential or outpatient (Robinson, 2005) and therapeutic alliance (Hawley & Weisz, 2005). Both the quality of the service system and community characteristics have been neglected as predictors of family involvement.

Adapting Aday and Anderson's model, the present study examines the role of child, family, service system, and community characteristics in family involvement in treatment. In addition, the study aims to address the conceptual and methodological gaps in the research on family involvement by using trained case reviewers to provide objective reports of family involvement. The case reviewers accessed clinical case files and interviews with the child, the primary caregiver, and various service providers before rating each family's involvement.

Operationalization of family involvement aligns with the definition put forth by Curtis and Singh (1996; see Figure 2). Service testing methodologies are employed to evaluate how well theoretical goals of SOC are implemented in practice and have been successfully used to assess the degree to which SOC principles are being expressed in services to families (Hernandez et al., 2001; Stephens, Holden, & Hernandez, 2004).

We predict that child and family factors found important in previous studies will continue to predict family involvement to varying degrees, with our improved methodology. Specifically, we expect younger, white children, with more severe and externalizing symptoms (Baker et al., 1993; Richards et al., 2008) to have higher levels of family involvement. Children with co-

occurring disabilities or chronic illnesses may have lower levels of family involvement (Baker et al., 1993). Further, we hypothesize that children who live with parents (as opposed to guardians who are often state appointed) that are married or partnered, with higher socioeconomic status (total household income and level of education) will have higher levels of family involvement (Baker et al., 1993). Additionally, we predict that increased levels of caregiver strain and poor caregiver health will be associated with decreased involvement (Brannan & Heflinger, 2007).

We hypothesize that the factors assessing the quality of the service system and the community level factors will be important in predicting family involvement in mental health treatment of children with SED as well. Service system factors, based on the theoretical goals of SOCs, will include the accessibility of behavioral health services, the array of types of services, coordination of services, individualized treatment, and the long-term view of the treatment plan (Hernandez et al., 2001; Stroul & Friedman, 1986). Level of rurality will be also be included in the analyses, as a community level factor, based on evidence that rural families may be less likely to receive adequate mental health treatment (Hartley, 2004; Hartley, Bird, & Dempsey, 1999) and that increased distance from treatment facility is associated with a decrease in family involvement (Baker et al., 1993). Finally, the model includes the state of residence, Tennessee and Mississippi, and the associated type of Medicaid program, managed care and fee for service, respectively.

## CHAPTER II

### METHODS

This study is a secondary analysis of existing interview data from the Impact Study of Medicaid in Tennessee and Mississippi. As part of a larger multi-state study (Cook, Heflinger, Hoven et al., 2004), researchers conducted interviews with caregivers of children enrolled in Medicaid who had a serious emotional disorder (SED) and the identified child at baseline. The second wave of data collection at the Tennessee and Mississippi sites, six months later, included interviews with service providers and a service testing model, described below. This study combines baseline and second wave data to test the conceptual model shown in Figure 1 examining child, family, service system, and community factors that influenced family involvement in their child's treatment during the six month period.

The relationships between family involvement and specific child and family factors have been explored, through various approaches. The present analyses seeks to analyze these factors with three methodological improvements: (1) the data are longitudinal, examining child and family factors at baseline with family involvement ratings at wave two, (2) the data from the child and caregiver are collected via face to face interviews, and (3) family involvement is rated by a trained case reviewer who has access to interviews from the child, the caregiver, service providers, and the case file. The case reviewers also rate service system variables. Community level factors (rural vs. non-rural and state of residence) are also included in the analyses.

## Sample

Participants include 136 children who a) met the criteria for SED at baseline, b) had a history of intensive levels of mental health service or great quantities of community-based mental health service in the past, and c) received a case review rating for family involvement. The participants were enrolled in and had historically received mental health services through their respective state's Medicaid program. Table 1 presents descriptive statistics for the sample on each of the independent variables, crosstabulated by the case reviewer's rating of acceptable or unacceptable family involvement. The children's ages ranged from 6 to 17 years with a mean  $11.8 \pm 2.8$  years. Around 40% were adolescents, age 13 to 17 years old. Three quarters of the sample was male, which is representative of the proportion of males in the SED population. The sample was approximately evenly divided between white and black, and children and their caregivers reported the same racial background in 88% of the cases. Two-thirds of the sampled primary caregivers (68.4%) reported having completed high school, and 60% are not married or partnered. Total monthly household income ranged from \$235 to \$8030, and 73% reported total monthly incomes under \$2000. The sample is almost evenly divided between Tennessee and Mississippi and a little more than one third reside in rural communities.

## Measures

As shown in Figure 1, the dependent variable was family involvement in treatment, and four levels of independent variables were included: (1) child, (2) family/caregiver, (3) service system, and (4) community.

### *Child Factors*

The Child Behavior Checklist (CBCL: Achenback, 1991) assessed the children's level of psychological symptoms. The CBCL is a widely used parent-report assessment in child psychotherapy with established reliability and validity. Specifically, the analyses focused on the Internalizing and Externalizing scores, as higher levels of family involvement and caregiver strain have been linked to more severe externalizing symptoms (Brennan & Brannan, 2005; Corcoran & Dattalo, 2006; Corcoran & Pillai, 2006). The mean and standard deviations of these scores are reported in Table 1; it is important to note that 100% of the sample had an externalizing t-score that surpassed the clinical cut off for normal, and 83.82% of the sample had an Internalizing t-score that surpassed the clinical cut off point. In other words, this sample has severe externalizing and internalizing symptoms.

A single item was used to measure child health, assessing the incidence of co-occurring disabilities or chronic illness. Nearly 60% of the sample reported having been diagnosed with a disability or chronic illness, co-morbid with SED. Child age, race, and gender were included in all analyses.

### *Family Factors*

At the family level, the total score from the Caregiver Strain Questionnaire (CSQ) (Brannan, Heflinger, & Bickman, 1997) was used to assess overall levels of distress experienced by the caregiver at the time of the interview. The CSQ is a 21 item survey (with responses on a 5-point scale from 1 "not at all" to 5 "very much") that assesses the number and frequency of symptoms of strain the caregiver is experiencing from the burdens of providing daily care. It is a reliable and valid scale for measuring caregiver strain among families of children with emotional or

behavioral disorders (Brannan, Heflinger, & Bickman, 1997). The total score, used in the analyses, is a summation of the scores on the three subscales: objective strain, subjective externalized strain, and subjective internalized strain. Caregiver relationship to child was divided into two categories for reasons related to sample size and statistical power: biological, adoptive, or foster parents were included in one group, while “other legal guardians” composed the second group<sup>1</sup>. Caregivers were also asked to rate their own health on a scale from 1 (poor health) to 5 (excellent health) using an item from the National Health Review. Overall, caregivers reported lower than average health at  $2.6 \pm 1.1$ , and moderate levels of strain  $3.1 \pm 1.6$ . Information on total household income was gathered through a series of questions inquiring about welfare support and other forms of income. The interviewer summed these amounts to report a total monthly household income, as an alternative to asking caregivers to estimate their total household income and report a single number. Self reported marital status was divided into three categories: married or living as married/partnered, divorced/separated/widowed, and never married. Self reported educational attainment was also divided into three groups: less than high school degree, graduated high school, and more than high school degree.

### *Service System Factors*

At wave two, trained case reviewers rated service systems in the following areas: behavioral health service access and array, service coordination, individualized service, and long term view. The reviewers rated service system factors on 6-point scales, ranging from 1-Completely

---

<sup>1</sup> Including foster parents in the second group, “other legal guardians”, did not significantly alter any findings.



Unacceptable to 6-Optimal (see Figure 2), as part of a standardized service testing process that included interviews with the child, the primary caregiver, and at least two service providers who had been involved over the past six months. Service testers, who had access to the children's case files, also rated the dependent variable, Family Involvement in Treatment. The average service system ratings for the sample are as follows: array and access  $3.7\pm 1.5$ , service coordination  $3.6\pm 1.7$ , individualized service  $3.6\pm 1.6$ , and long-term view  $3.3\pm 2.3$ . All four service system ratings have an average rating that is barely acceptable. Due to the high multicollinearity between the four service system variables, an index was created (Cronbach's  $\alpha=.87$ ) that averaged these four variables. This index, labeled the "Quality of Service System," was on the same 6-point scale and is used in the multiple regression analyses.

### *Community Factors*

Certain community level factors were stable over both waves of data, and may affect the service system and the families' ability to be involved in treatment. Rurality was defined by the county in which the children lived at the time nearest their last Medicaid eligibility period. The Rural-Urban Commuting Area (RUCA) Codes (Version 2.0) was used to classify counties in Tennessee and Mississippi (WWAMI Rural Health Research Center, 2006), and then dichotomized (1 = rural, 0 = not rural), corresponding with RUCA Categorization C (WWAMI Rural Health Research Center, 2006). Also, the state of residence, Mississippi or Tennessee, and the type of Medicaid funding, fee for service or managed care (respectively), were considered as community factors.

### *Family Involvement*

The dependent variable is Family Involvement in Treatment Planning. Similar to other service system ratings, this is on a 6-point scale, ranging from 1-Completely Unacceptable to 6-Optimal (see Figure 2). The criteria used to rate family involvement closely resemble the conceptualization put forth by Curtis and Singh (1996). Case Reviewers rated family involvement at wave two, at the same time that they rated the other service system factors, based on interviews with the child, the caregiver, service providers, and documentation in the case files. The average family involvement rating was  $4.0 \pm 1.5$ , barely within the acceptable range. A rating of 1-3 is considered unacceptable family involvement, and a rating of 4-6 is considered acceptable family involvement. Seventy-one percent of the sample had an acceptable rating for family involvement.

### Analyses

In addition to descriptive analyses of all factors and bivariate analyses to examine differences between children with high levels of family participation versus those with low levels, we used a multiple regression. In order to develop the most parsimonious model, we conducted a series of four regression analyses, examining each set of factors (child, family, service system, and community) separately, including those variables that were significant at  $p < .15$  in the bivariate analyses. The final model included all significant predictors from each equation in a final model. In addition, using the final model, we conducted logistic regression to predict the odds that children would have acceptable ratings of family involvement.

Figure 2 Case Review Rating Descriptions; Adapted from Human Systems and Outcomes, Inc. (1998)

	Unacceptable (Ratings 1-3)	Acceptable (Ratings 4-6)
Array & Access	Few supports and services are available and used; seen as generally unsatisfactory by the child/family. The array provides few options, substantially limiting use of professional judgment and family choice in the selection of providers. Access is difficult.	An array of behavioral health supports and services is available to help the child reach favorable levels of functioning. A usually dependable combination of supports and services are available, appropriate, used, and seen as satisfactory by the child/family. Services are accessible.
Service Coordination	There is substantially limited coordination of services for this child/family. Services are substantially fragmented across settings. Breakdowns in services may occur and risks may not be adequately managed for the child/family.	There is a generally effective single point of coordination and accountability for the child/family's services and results. The service coordinator, in collaboration with the family and service team, demonstrates competence, authority, and independence necessary to plan, monitor, and adapt services.
Individualized Services	Basic behavioral health supports and service are not assembled into a sensible service process. Few child/family preferences are considered in the assembly of supports and services. The child/family may report conflicting service strategies or inconveniences that cause a degree of hardship.	Essential behavioral health supports and services are assembled into a holistic and coherent service process having a workable fit between the child/family situation and the service mix. Many child/family preferences are accommodated. The child/family report few conflicting strategies or inconveniences that cause hardship.
Long Term View (LTV)	The child has service plan goals set by one or more funding agencies but does not form a common planning direction that is accepted and used by service team members. Goals do not adequately address requirements that could increase the likelihood of successful future transitions.	The child has a written set of strategic goals that is accepted and shared among service team members. The LTV anticipates the child's next major transition and defines what the child must have, know, and be able to do to be successful when that threshold is crossed. The LTV reflects strengths and needs of the child/family.
Family Involvement (Dependent Variable)	Key family members and/or the caregiver are notified late or not at all about service planning meetings. Meetings are not held at times that are appropriate or convenient for the family. Decisions are made without the family present. Services may be denied because of failure to show or comply.	Key family members and/or the caregiver are full, effective, and ongoing participants in all aspects of assessment, planning, making service arrangements, selecting providers, monitoring, and evaluating services and results. Special accommodations or supports are offered as needed to assist participation.

## CHAPTER III

### RESULTS

#### Bivariate Analyses

First, bivariate logistic regression analyses (for continuous predictors) and cross-tabulations with chi-squared statistics (for categorical predictors) were conducted to determine which predictor variables influenced the probability of having an acceptable level of family involvement. Several variables significantly (at  $p < .05$ ) predicted the probability of having acceptable levels of family involvement, when examined independently: age, race, caregiver's self-reported health, behavioral health system array and access, service coordination, individualized services, long-term view, and state of residence/type of Medicaid system (see Table 1). In general, white, younger children who have healthier parents and a positive rating on each area of service system quality are more likely to have more involved families. Also, children living in Tennessee with a managed care Medicaid system had higher probability of acceptable family involvement.

#### Multiple Regression Analyses

Multiple regression results predicting level of family involvement are presented in Table 2.

##### *Model 1: Child Predictors*

The first model includes the predictor variables that pertain to the individual child, that were significant at  $p < .15$  in the bivariate analyses. Age and ethnicity were the only statistically

Table 1 Sample Summary Statistics: Subdivided into Unacceptable and Acceptable Ratings of Family Involvement

Characteristics	Total	Family Involvement	
		Unacceptable	Acceptable
<i>n</i>	136	39	97
	% (CI) or mean (SD)	% (CI) or mean (SD)	% (CI) or mean (SD)
<i>Child Level</i>			
Gender (%)			
Male	74.2 (66, 82)	82.1 (69, 95)	71.1 (62, 80)
Female	25.8 (18, 34)	17.9 (5, 31)	28.9 (20, 38)
Race (%)			
White*	48.5 (40, 57)	35.9 (21, 52)	53.6 (44, 74)
Black	44.1 (36, 53)	51.3 (35, 68)	41.2 (31, 51)
Other	7.4 (2, 12)	12.8 (2, 24)	5.2 (0, 10)
Age (years, mean)*	11.8 (2.8)	12.2 (2.7)	11.6 (2.8)
Comorbid Disability/Chronic Illness (%)	58.5 (51, 67)	64.1 (48, 80)	56.3 (46, 66)
CBCL ( <i>t</i> scores, mean)			
Externalizing	79.7 (7.7)	79.7 (9.9)	79.7 (6.7)
Internalizing	75.3 (9.7)	75.1 (10.7)	75.4 (9.4)
<i>Family Level</i>			
Caregiver Relationship to Child (%)			
Biological/Adoptive/Foster parent	77.8 (71, 85)	76.9 (63, 91)	78.1 (70, 87)
Other Legal Guardian	22.2 (15, 29)	23.1 (9, 37)	21.9 (13, 30)
Caregiver Marital Status			
Never Married	41.2 (33, 50)	23.1 (9, 37)	17.5 (10, 25)
Married/Partnered	19.1 (12, 26)	35.9 (20, 52)	43.3 (33, 53)
Divorced/Widowed	39.7 (31, 48)	41.0 (25, 57)	39.2 (29, 49)
Caregiver Education Status (%)			
Less than High School	31.6 (24, 40)	35.9 (20, 52)	29.9 (21, 39)
High School Degree	28.7 (21, 36)	30.8 (16, 46)	27.8 (19, 37)
More than High School	39.7 (31, 48)	33.3 (18,49)	42.2 (32, 52)
Monthly Household Income (\$, mean)	1,650 (1,218)	1,448 (875)	1,731 (1,327)
Caregiver Strain Total Score (mean)	3.1 (1.6)	3.3 (1.8)	3.1 (1.5)
Caregiver Health (mean)**	2.6 (1.1)	2.2 (1.1)	2.7 (1.0)
<i>Service System Level (%)</i>			
Array & Access***			
Unacceptable	39.6 (31, 48)	73.0 (58, 88)	26.9 (18, 36)
Acceptable	60.4 (52, 69)	27.0 (12, 42)	73.1 (64, 82)
Service Coordination***			
Unacceptable	42.2 (34,51)	74.3 (59, 90)	30.1 (21, 40)

Table 1, continued

Acceptable	57.8 (49, 66)	25.7 (10, 41)	69.9 (60, 79)
Individualized Services***			
Unacceptable	42.7 (34, 51)	77.1 (63, 92)	30.2 (21, 40)
Acceptable	57.3 (49, 66)	22.9 (8, 37)	69.8 (60, 79)
Long Term View***			
Unacceptable	69.9 (61, 79)	87.5 (73, 100)	64.6 (54, 75)
Acceptable	30.1 (21, 39)	12.5 (0, 27)	35.4 (25, 46)
<i>Community Level</i>			
Rural (%)	36.0 (28, 44)	43.6 (27, 60)	33.0 (23, 43)
Medicaid System (%)*			
Fee for Service ( MS)	53.4 (45, 62)	69.2 (54, 84)	47.4 (37, 58)
Managed Care (TN)	46.3 (38, 55)	30.8 (16, 46)	52.6 (42, 63)

Note: CBCL= Child Behavior Checklist (Achenbach, 1991); Caregiver Strain Questionnaire (Brannan, Heflinger, & Bickman, 1997) scored 1 (low) to 5 (high). Caregiver health similarly rated 1 (poor) to 5 (excellent).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

statistically significant, there is little substantial significance for this population—an 8 year old would have a family involvement rating less than 1 point higher than a 16 year old. A white child is expected to have a family involvement rating that is .593 higher than a non-white child ( $p=.018$ ).

#### *Model 2: Family Predictors*

The second model included all predictor variables that pertain to the family system or primary caregiver that were significant at  $p < .15$  in the bivariate analyses. In this model, caregiver's self-rated health was the only statistically significant predictor of family involvement at  $p < .05$ . For each unit increase in reported caregiver health, family involvement ratings increased by .350 ( $p=.002$ ). Substantively, this means that a child with a caregiver in excellent

Table 2 Multiple Regression Models of Child, Family, Service System, and Community Level Factors on Family Involvement (1=poor to 6=optimal)

	Model 1 Child Factors		Model 2 Family Factors		Model 3 Service System Factors		Model 4 Community Factors		Final Model	
	$\beta$ (se)	<i>p</i>	$\beta$ (se)	<i>p</i>	$\beta$ (se)	<i>p</i>	$\beta$ (se)	<i>p</i>	$\beta$ (se)	<i>p</i>
<i>Child Level Factors</i>										
Race: White (referent Non-white)	0.593 (0.227)	.018							0.283 (0.215)	.190
Age in years	-0.113 (.040)	.005							-0.028 (0.036)	.434
<i>Family Level Factors</i>										
Monthly Household Income in \$1,000 increments			0.158 (0.082)	.056						
Caregiver Health			0.350 (0.113)	.002					0.195 (0.098)	.048
<i>Service System Level Factors</i>										
Quality of Service System					0.663 (0.090)	.000			0.629 (0.096)	.000
<i>Community Level Factors</i>										
Rural							-0.206 (0.288)	0.476		
State of Residence: TN/Managed Care (referent MS/Fee for Service)							0.477 (0.261)	.070		
(Adjusted) R2	0.08		0.09		0.37		0.04		0.41	
Df	2, 133		2, 131		1, 123		2, 133		4, 118	
F score	6.29**		7.22**		54.55***		2.55		15.60***	

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Note: Robust standard errors

health is expected to have a family involvement rating 2 points higher than a child with a caregiver in poor health. Monthly household income is no longer statistically significant in Model 2, when controlling for caregiver health.

### *Model 3: Service System Predictors*

The quality of the service system had a significant impact on the level of family involvement. In bivariate analyses, all four service system characteristics significantly influences family involvement. Model 3, using the Quality of Service System Index, shows that for every one-unit change in the overall rating of the service system family involvement increased by .663 ( $p < .001$ ). Also, the service system model has a much higher adjusted R-squared statistic (.37 as compared with .08 and .09) and F statistic (54.55 as compared with 6.29 and 7.22) than the previous two models, indicating that the service system ratings explain four times as much variance in family involvement ratings as the previous two models.

### *Model 4: Community Predictors*

The fourth model included both community-level variables, as they were both significant at  $p < .15$  in the bivariate analyses. In the bivariate analyses, Medicaid system was predictive of family involvement. However, when the influence of rurality was accounted for, the effect of the child being served in the Tennessee managed care Medicaid system was not significant. This may be due to the fact that the children in the sample who lived in Tennessee were significantly less likely to live in rural areas ( $\beta = -.376, p < .001$ ) than those who lived in Mississippi. Thus, when we control for rurality, there are no longer any effects of state of residence or type of



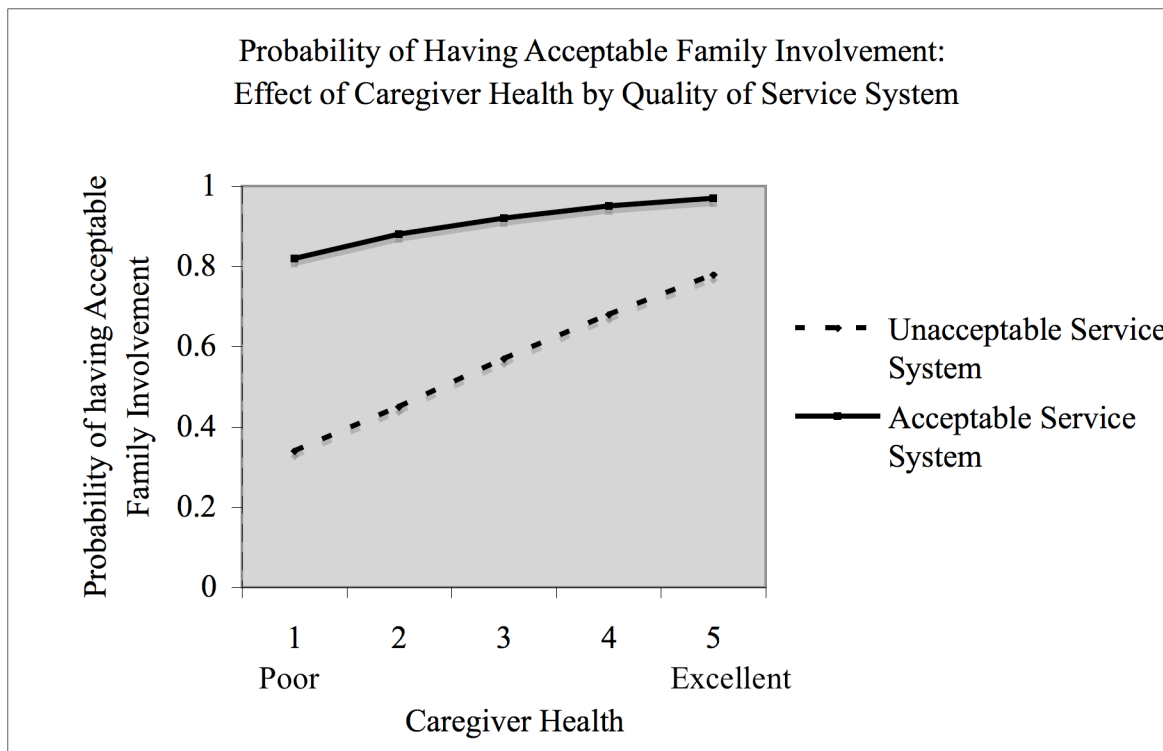
Medicaid system in this sample. As with bivariate analyses, rurality was not predictive of family involvement.

#### *Model 5: All Predictors*

When all significant factors from Models 1 through 4 were included in a final model, only caregiver's health and quality of the service system remained significant predictors of family involvement. When controlling for all other variables, for every one-unit increase in reported caregiver health, there was an increase of .195 in the family involvement rating ( $p=.048$ ), and for every one-unit increase in the overall rating of the quality of the service system, there was an increase of .629 in the rating of family involvement ( $p<.001$ ). Child race and age fell out of the model for interesting reasons. White children were significantly more likely to have healthy parents ( $\beta=.092, p=.021$ ), but were not more likely to have a higher quality service system. Younger children were more likely to have a higher quality service system ( $\beta=-.567, p=.001$ ). Implications of these variables are discussed below.

Post-hoc logistic regression analyses were used to aid in substantive interpretation of these results. For these analyses, family involvement was dichotomized into acceptable (ratings 4-6) or unacceptable (ratings 1-3), as per the definitions of these ratings in the case review protocol. Likewise, the quality of the service system was dichotomized into acceptable (greater than a score of 3.5) and unacceptable (less than a score of 3.5). No other variables were included in the model. Having an acceptable service system increased the odds of having acceptable family involvement over nine times (OR=9.29, CI=3.3, 26.0). The relationship between caregiver health, quality of the service system, and family involvement can be seen more clearly using Figure 3.

Figure 3 The Probability of Having Acceptable Family Involvement: Effect of Caregiver Health by Quality of Service System



This graph shows that the effects of caregiver health on family involvement are less important if the child has an acceptable service system. Most strikingly, children who have an acceptable service system and a caregiver with poor health are more likely to have acceptable family involvement than children who have an unacceptable service system and a caregiver with excellent health.

Table 3: Probability of Having Acceptable Family Involvement: The influence of Race, Adult Health, and Quality of the Service System

Quality of Service System	White		Non-white	
	Unacceptable	Acceptable	Unacceptable	Acceptable
Poor Adult Health	40.8%	86.3%	27.9%	78.0%
Medium Adult Health	60.0%	93.2%	45.7%	88.5%
Excellent Adult Health	82.5%	97.7%	72.6%	96.0%

In Model 4, race (white versus non-white) no longer significantly predicted family involvement. Still, race was an important factor as shown in Table 3. Table 3 presents probabilities that a child had acceptable family involvement given certain values on quality of service system, caregiver health, and race. Non-white children with an unacceptable service system and a caregiver with poor health were less likely to have acceptable family involvement than white children in the same circumstances, 27.9% and 40.8% respectively. These important findings were statistically overshadowed due to the significant relationship between white race and improved caregiver health.

## CHAPTER IV

### DISCUSSION

In summary, the predictors of family involvement for this sample of children on Medicaid, receiving mental and behavioral health services for severe emotional disturbances (SED) in Tennessee and Mississippi, include caregiver health, the quality of the behavioral health service system, and, to some extent, race. The most influential predictor of adequate levels of family involvement in mental health treatment for children with SED was the quality of the service system. Specifically, white children who had caregivers in good health had a higher probability of having acceptable family involvement in treatment.

These findings confirm the hypothesis that service system quality is an important predictor of acceptable family involvement in treatment. The findings that the child's race and the caregiver's health predicted family involvement were hypothesized, based on existing theory and previous research findings. However, several other hypotheses based on previous research were not supported. Reasons for these inconsistencies may have to do with limitations of the sample. For instance, it is highly probable that increased severity on the CBCL scores of Internalizing and Externalizing symptoms would influence levels of family involvement in a sample with a range of scores; however, the sample in this study had extremely severe scores. This lack of variability may have led to the finding of insignificant effects on family involvement. The same or different limitations may explain the absence of education or income effects. Baker et al. (1993) found a strong relationship between socioeconomic status and family involvement, but the same findings were not replicated here. It may be that the sample, where the target child in the families was enrolled in Medicaid and the average monthly income was \$1,650, is not representative of higher

socioeconomic families, or that the improved methodologies of this study may have illuminated a bias towards middle- and upper-class families present in studies that use provider report alone.

Similarly, caregiver strain did not have the predicted relationship to family involvement. Further exploration revealed that increased caregiver strain was significantly related to more severe child symptomatology. Caregivers who reported higher levels of strain were significantly more likely to have children with more severe internalizing scores ( $\beta=.034, p=.007$ ), and more severe externalizing scores ( $\beta=.053, p<.001$ ) on the CBCL. Because this sample was characterized by severe symptoms, there was little variability in caregiver strain scores. Caregiver strain may still be a factor that influences family involvement, and the lack of family involvement in treatment for severely emotionally disturbed children could be a sign of high levels of caregiver strain.

Other limitations of the study, in addition to a lack of variability on some variables include sampling bias, and methodological and measurement concerns. Primarily, it is important to note that the children sampled were not receiving services from a self-identified “system of care”, but rather a service system. Thus, the case review ratings on the quality of the service system should not be interpreted as an evaluation of SOCs. Rather, the existing state-circle Medicaid service systems had been rated in SOC principles in order to examine quality of care. Second, the case reviewers who rated the level of family involvement also rated the service system factors, and rated all these factors at wave two. Therefore, it is possible that the case reviewers tended to rate family involvement and other service system factors similarly as a result of the proximity of the ratings in time. The case reviewers were all trained and supervised, and hopefully this possible contamination of data was acknowledged and avoided, but there is no inter-rater reliability measure on this sample to check for bias. Third, caregiver health was self-rated, which is subject

to bias and error. We do not have a measure of caregiver's medical history or medical service use, but rather a measure of the caregiver's perceived health.

However, the importance of the research for theory and the new use of a comprehensive, multi-perspective methodology outweigh these limitations. Future research on family involvement should include ratings of the quality of the services being provided to the child and family, instead of only child and family demographic and diagnostic variables. We now know how influential the quality of services can be on increasing family involvement. This makes sense when families are viewed as rational consumers of behavioral health services, who seek to maximize their payoff (in the form of competent providers and effective treatment results) for the investment of their valuable time and energy. It also makes sense when families are viewed as emotional, stressed, human beings whose goal is to be heard and feel cared for by service providers and service systems. The problem has been that service providers and researchers have been guilty of assuming that all services are good and helpful, and blaming the family for not engaging with the system in the treatment process. On the contrary, trained case reviewers rated only 60% of the sampled children's service systems as acceptable. Nonetheless, over 70% of the children had families who were adequately involved in treatment.

The most important next step is to isolate what specific aspects of the quality of a service system can be maximized to enhance family involvement. While the characteristics of service systems examined here are important, as outlined by the philosophy of systems of care, they may not be the most important aspects for family involvement. Future analyses should examine different aspects of service provision and their relationship to family involvement to understand what specific goals of care most effectively facilitate the involvement of families.

## REFERENCES

- Aday, L.A., & Andersen, R.M. (1974). A framework for the study of access to medical care. *Health Services Research: The Global Journal for Improving Health Care Delivery and Policy*, 9(3), 208-220.
- Aday, L.A., & Andersen, R.M. (1981). Equity of access to medical care: A conceptual and empirical overview. *Medical Care*, 19, 4-27.
- Achenbach, T.M. (1991). *Manual for Child Behavior Checklist Ages 4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T.M., & Rescorla, L.A. (2001). *Manual for the ASEBA School-Age Forms and Profiles*. Burlington, VT: University of Vermont Research Center for Children, Youth, and Families.
- Andersen, R.M., & Davison, P.L. (1996). Access to medical care: Measurement and trends. In: R.M. Anderson, T.H. Rice, G.F. Kominski (Eds.), *Changing the US Health Care System: Key issues in health services, policy, and management*. San Francisco: Josey Bass Publishers, Inc.
- Baker, B.L., Blacher, J., & Pfeiffer, S. (1993). Family involvement in residential treatment of children with psychiatric disorder and mental retardation. *Hospital and Community Psychiatry*, 44, 561-566.
- Bickman, L., Foster, E.M., & Lambert, W. (1996). Who gets hospitalized in a continuum of care? *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 74-80
- Brannan, A.M. (2003). Ensuring effective mental health treatment in real-world settings and the critical role of families. *Journal of Child and Family Studies*, 12, 1-10.
- Brannan, A.M., & Heflinger, C.A. (2007). Caregiver, child, family, and service system contributors to caregiver strain in two child mental health service systems. *The Journal of Behavioral Health Services and Research*, 33, 408-422.
- Brannan, A.M., Heflinger, C.A. & Bickman, L. (1997). The Caregiver Strain Questionnaire: Measuring the impact on the family of living with a child with serious emotional disturbance. *Journal of Emotional and Behavioral Disorders*, 5, 212-222.
- Brannan, A.M., Heflinger, C.A. & Foster, E.M. (2003). The role of caregiver strain and other family variables in determining children's use of mental health services. *Journal of Emotional and Behavioral Disorders*, 11(2), 78-92.
- Brennan, E.M., & Brannan, A.M. (2005). Participation in the paid labor force by caregivers of children with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders*, 13, 237-246.

- Bussing, R., Zima, B.T., Gary, F.A., Mason, D.M., Lean, C.E., Sinha, K., & Garvan, C.W. (2003). Social networks, caregiver strain, and utilization of mental health services among elementary school students at high risk for ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*, 842-850.
- Cook, J.A., Heflinger, C.A., Hoven, C.W., Kelleher, K.J., Mulkern, V., Paulson, R., et al. (2004). A multi-site study of Medicaid-funded managed care versus fee-for-service plans' effects on mental health service utilization of children with severe emotional disturbance. *The Journal of Behavioral Health Services & Research, 31*, 384-402.
- Cook, J.R., & Kilmer, R.P., (2004). Evaluating systems of care: Missing links in children's mental health research. *Journal of Community Psychology, 32*, 655-674.
- Corcoran, J., & Dattalo, P. (2006). Parent involvement in treatment for ADHD: A meta-analysis of the published studies. *Research on Social Work Practice, 16*, 561-570.
- Corcoran, J., & Pillai, V. (2006). A meta-analysis of parent-involved treatment for child sexual abuse. *Research on Social Work Practice, 18*, 453-464.
- Curtis, W.J., Singh, N.N. (1996). Family involvement and empowerment in mental health service provision for children with emotional and behavioral disorders. *Journal of Child and Family Studies, 5*, 503-517.
- DeChillo, N., Koren, P.E., & Schultze, K.H. (1994). From paternalism to partnership: Family and professional collaboration in children's mental health. *American Journal of Orthopsychiatry, 64*, 564-576.
- Foster, E.M. (1998). Does the continuum of care improve the timing of follow-up services? *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 805-814.
- Foster, E.M, Saunders, R.C., & Summerfelt, W.T. (1996). Predicting level of care in mental health services under a continuum of care. *Evaluation and Program Planning, 19*, 143-153.
- Hartley, D. (2004). Rural health disparities, population health, and rural culture. *American Journal of Public Health, 94*, 1675-1678.
- Hartley, D., Bird, D.C., & Dempsey, P. (1999). Rural mental health and substance abuse. In T.C. Ricketts (Ed.), *Rural health in the United States* (pp. 159-178). New York, NY: Oxford University Press.
- Hawley, K.M., & Weisz, J.R. (2005). Youth versus parent working alliance in usual clinical care: Distinctive associations with retention, satisfaction, and treatment outcome. *Journal of Clinical Child and Adolescent Psychology, 34*, 117-128.



- Hernandez, M., Gomez, A., Lipien, L., Greenbaum, P.E., Kathleen, H.A., & Gonzalez, P. (2001). Use of the system-of-care Practice Review in the National Evaluation: Evaluation the fidelity of practice to system-of-care principles. *Journal of Emotional and Behavioral Disorders*, 9, 43-52.
- Human Systems and Outcomes, Inc. (1998). *Case Review Protocol: For Examination of the Impact of Managed Care on Children with Serious Emotional Disorders and Adolescents with Substance Abuse Problems (Version 1.4)*. US Department of Health and Human Services.
- Israel, P., Thomsen, P.H., Langeveld, J.H., & Stormark, K.M. (2007). Parent-youth discrepancy in the assessment and treatment of youth in usual clinical care settings: Consequences to parent involvement. *European Child & Adolescent Psychiatry*, 16, 138-148.
- Kutash, K., & Rivera, V.R. (1995). Effectiveness of children's mental health services: A review of the literature. *Education and Treatment of Children*, 18, 443-77.
- Koroloff, N.M., & Friesen, B.J. (1990). Family-centered services: Implications for mental health administration and research. *Journal of Health Administration*, 17, 13-25.
- McKay, M.M., Pennington, J., Lynn, C.J. & McCadam, M. (2001). Understanding urban child mental health service use: Two studies of child, family, and environmental correlates. *The Journal of Behavioral Health Services and Research*, 28, 475-483.
- Measelle, J.R., Weinsten, R.S., & Martinez, M. (1998). Parent satisfaction with case managed systems of care for children and youth with severe emotional disturbance. *Journal of Child and Family Studies*, 7, 451-467.
- Osher, T.W., deFur, E., Nava, C., Spencer, S., & Toth-Dennis, D. (1998). New roles for families in systems of care. *Systems of Care: Promising Practices in Children's Mental Health, 1998 Series* (pp. 68-70). Washington, DC: Center for Effective Collaboration & Practice, American Institutes for Research.
- Richards, M.M., Bowers, M.J., Lazicki, T., Krall, D., & Jacobs, A.K. (2008). Caregiver involvement in the intensive mental health program: Influence on changes in child functioning. *Journal of Child & Family Studies*, 17, 241-252.
- Robinson, A.D., Kruzich, J.M., Friesen, B.J., Jivanjee, P., & Pullmann, M. (2005). Preserving family bonds: Examining parent perspectives in the light of practice standards for out-of-home treatment. *Journal of Orthopsychiatry*, 75, 632-643.
- Stephens, R.L., Holden, E.W., Hernandez, M. (2004). System-of-care Practice Review scores as predictors of behavioral symptomatology and functional impairment. *Journal of Child and Family Studies*, 13, 179-191.
- Stroul, B.A., & Friedman, R.M. (1986). *A System of Care for Severely Emotionally Disturbed Children and Youth*. Washington, DC: Georgetown University Child Development Center, CASSP Technical Assistance Center.

Yatchmenoff, M.S., Koren, P. E., Friesen, B.J., Gordon, L.J., & Kinney, R.F. (1998). Enrichment and stress in families caring for a child with a serious emotional disorder. *Journal of Child and Family Studies*, 7, 129-145.

Washington State Department of Health. (2006). *Guidelines for using rural-urban classification systems for public health assessment*. Tumwater, WA: Washington State Department of Health.

WWAMI Rural Health Research Center. (2006). *Rural Urban Commuting Codes (Version 2.0)*. Seattle, WA: University of Washington.