

System of Care Assessment Measures Predict Clinical Outcomes

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Purpose

- ▶ **To determine if symptomatology of children in the present sample decreases over time**
- ▶ **To determine if there is a significant difference between CBCL rates of change based on individual-level characteristics at intake**
- ▶ **To determine if there is a significant difference between CBCL rates of change based upon initial system-level characteristics**



Research Questions

- ▶ **Does symptomatology change over time in children with severe emotional disturbance who are receiving services through a CMHS-funded system of care?**



Research Questions

- ▶ **Are changes in child symptomatology over time systematically related to selected characteristics of the child?**



Research Questions

- ▶ **Are changes in child symptomatology over time systematically related to initial site-level characteristics?**



National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program

- ▶ **Initiated in 1994 by Center for Mental Health Services**
- ▶ **Five year outcome-based evaluation**
- ▶ **A total of 85 grant communities awarded since programs inception**



Demographic Characteristics of Sample

Grant Communities (from those funded in 1998 and 1999)	23
Number of children	1800
Mean age	11.8 yrs (sd = 3.28)
Gender = Male	67.2%
Race = White	60%
Annual Family Income > \$15,000	54.3%

Measures

Child Behavior Checklist (CBCL)

- ▶ **Assesses behavioral and emotional problems**
- ▶ **8 syndrome scores**
 - **Internalizing**
 - **Withdrawn**
 - **Somatic complaints**
 - **Anxious/depressed**
 - **Thought problems**
 - **Externalizing**
 - **Social problems**
 - **Attention problems**
 - **Aggressive problems**
 - **Delinquent problems**
- ▶ **17 social competence items and 113 behavior problem items**
- ▶ **Internal consistency (alpha) = .96**
- ▶ **Test-retest reliability (after 7 days) $r = .93$**

Measures

System of care Assessment

- ▶ **Assessment of implementation of system-of-care principles in program administration and service delivery**
- ▶ **Completed at regular intervals**
- ▶ **Information collected by the national evaluation team during a multi-day site visit**



Goals of System of Care Assessment

- ▶ Describe approaches used by grant communities to implement system of care principles
- ▶ Document the extent to which system of care principles are achieved within each grant community and across grant communities
- ▶ Track system development



Infrastructure Domain

	Governance	Management and Operations	Service Array	Quality Monitoring
Family-focused				
Culturally Competent				
Interagency				
Community-based				
Accessible				
Collaborative/ Coordinated				
Individualized				
Least Restrictive				



Service Delivery Domain

	Entry into Services	Service Planning	Service Provision	Care Monitoring
Family-focused				
Culturally Competent				
Interagency				
Community-based				
Accessible				
Collaborative/ Coordinated				
Individualized				
Least Restrictive				



Range of Scores and Definitions

Score	Definition
5	Efforts have been made to address the principle and have been effective; Intended goals are largely being accomplished
4	Although efforts have been made to incorporate the principle into practice and have been effective, more needs to be done to fully achieve the principle
3	Efforts have been made but are still in developmental stages
2	Efforts are in the early stages of development and have been minimally effective
1	No effort or almost no effort has been made



System of Care Assessment

- ▶ **Data in the present study represent results of initial system of care assessment visit**
- ▶ **Visit conducted during second year of funding**
- ▶ **Important to note that development of these systems is ongoing and scores do not represent how these systems have developed over time**



Factors that Influence Outcomes

- ▶ **Other factors included in present study**
 - **Gender**
 - **Age**
 - **Race**
 - **Annual Family Income Level**



Procedures

- ▶ **1800 children and adolescents served by CMHS initiative**
- ▶ **CBCL administered 1 - 5 occasions within a 24 month timeframe**
- ▶ **Three-level hierarchical linear model**
 - **Calculated individual growth curves for each child in sample**
 - **Examined between group differences based upon individual level characteristics of sample**
 - **Examined influence of initial system level characteristics on change**



Child Behavior Checklist

Final Estimation of Fixed Effects for CBCL Externalizing Scores

Unconditional Model

Fixed Effect	Coefficient	Standard Error	T-Ratio	Approximate d. f.	P-Value
Average initial CBCL score	28.269	0.584	54.357	22	0.000
Average rate of change in CBCL per year	-4.357	0.496	-10.984	22	0.000

Random Effects	Variance Component	d. f.	P-Value
Initial CBCL Score	106.331	895	0.000
Rate of change in CBCL	16.388	895	0.000
Level 1 error	51.738		



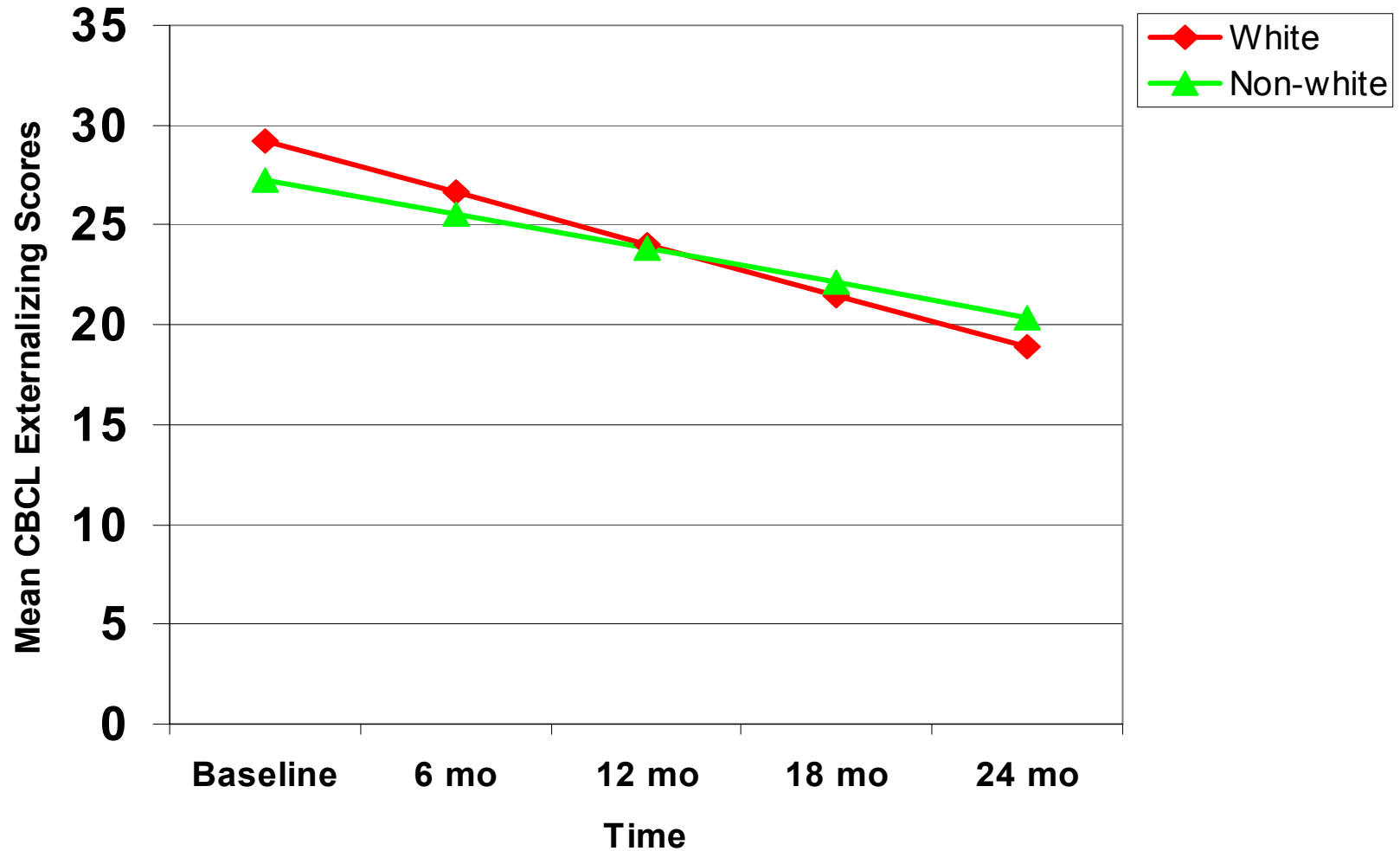
Child Behavior Checklist

Final Estimation of Fixed Effects for CBCL Externalizing Scores
Level Two

Fixed Effect	Coefficient	Standard Error	T-ratio	Approximate d.f.	P-value
For Intercept (B0)					
Age	-1.482	0.632	-2.344	22	0.029
White	1.915	0.764	2.507	22	0.020
For Timeframe/slope (B1)					
White	-1.705	0.758	-2.248	22	0.035



Change in CBCL Externalizing Raw Scores by Race



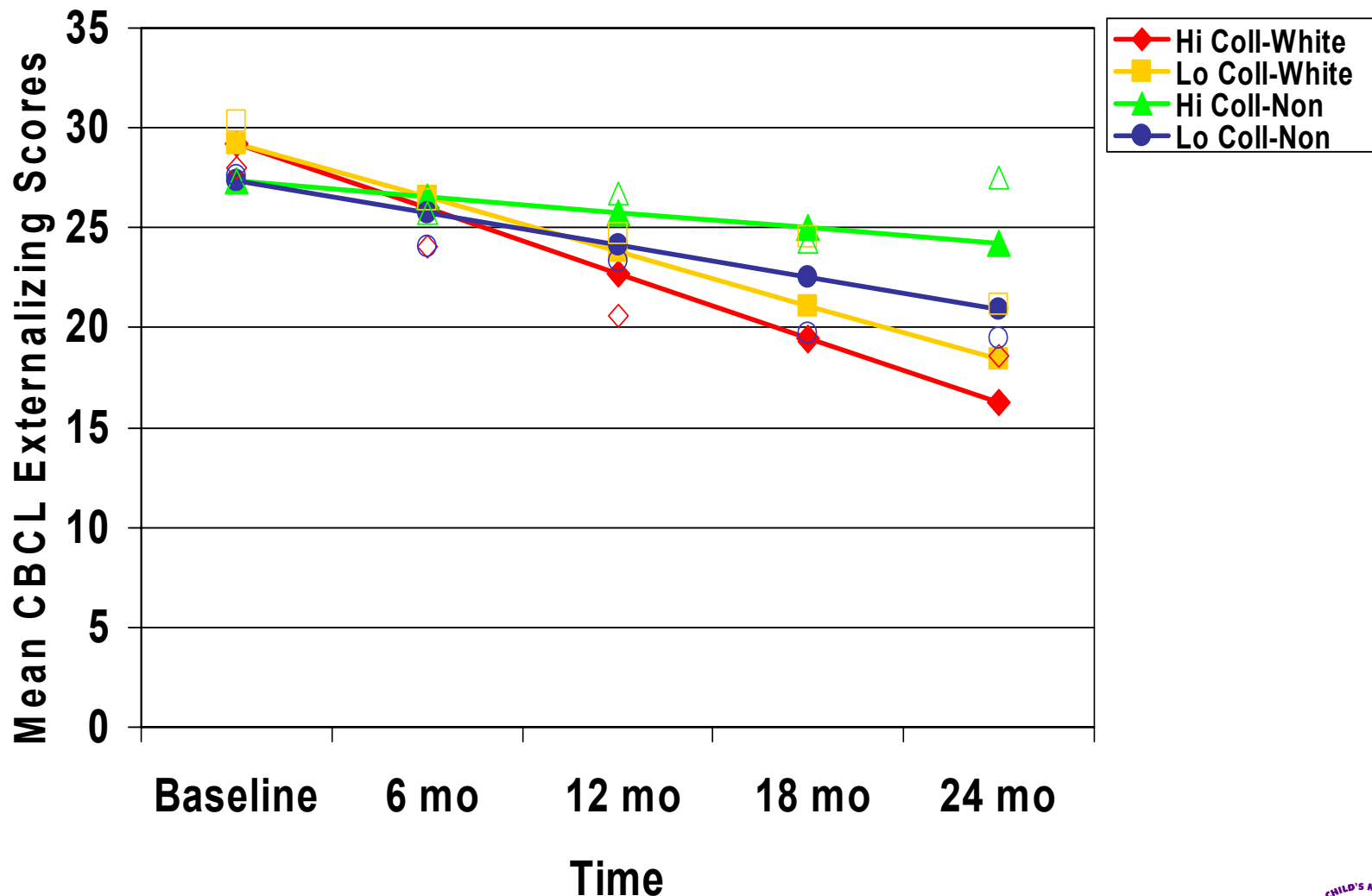
Child Behavior Checklist

Final Estimation of Fixed Effects for CBCL Externalizing Scores
Level Three

Fixed Effect	Coefficient	Standard Error	t-ratio	Approximate d.f.	p-value
For Intercept (B0)					
Least Restrictive					
Age	-1.498	0.678	-2.209	22	0.038
White	1.878	0.908	2.069	22	0.050
For Time/slope (B1)					
Collaborative/ coordinated					
White	-6.225	2.636	-2.361	21	0.028



CBCCL Externalizing Raw Scores: Collaboration on Race for Slopes



Percentage of Sample in Detention or Jail in Past 6 Months in Low Collaboration Communities by Race

	Non-White	White
Entry (<i>N</i> = 500)	19.2%	21.0%
6 months (<i>N</i> = 277)	21.8%	13.7%
12 months (<i>N</i> = 181)	15.8%	10.5%
18 months (<i>N</i> = 87)	13.0%	20.3%
24 months (<i>N</i> = 40)	0.0%	33.3%

^a $p < .05$

^b $p < .01$

^c $p < .001$



Percentage of Sample in Detention or Jail in Past 6 Months in High Collaboration Communities by Race

	Non-White	White
Entry (<i>N</i> = 564)	23.6%	20.5%
6 months (<i>N</i> = 277)	19.7%	13.1%
12 months (<i>N</i> = 145) ^b	24.0%	7.4%
18 months (<i>N</i> = 50)	9.1%	7.7%
24 months (<i>N</i> = 24)	0.0%	0.0%

^a $p < .05$

^b $p < .01$

^c $p < .001$



Number of Different Service Delivery Locations Used From Entry to 6 Months by Race in Low Collaboration Communities

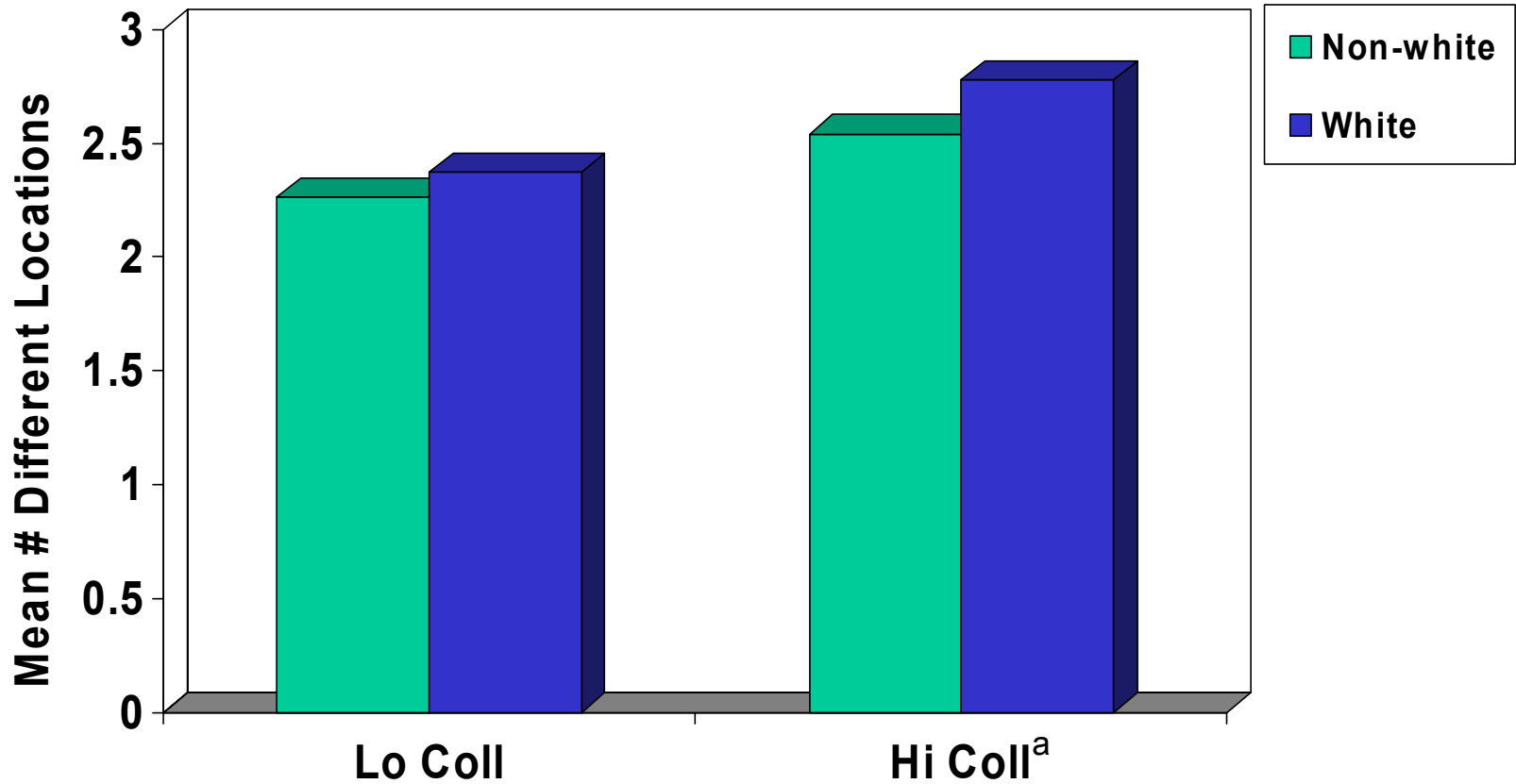
# of Locations	Non-White (N = 140)	White (N = 265)
1	37.5%	30.9%
2	26.4%	29.4%
3	18.6%	19.6%
4	15.7%	12.8%
5	2.9%	6.0%
6	0.7%	1.1%

Number of Different Service Delivery Locations Used From Entry to 6 Months by Race in High Collaboration Communities

# of Locations	Non-White (N = 143)	White (N = 230)
1	24.5%	16.5%
2	23.8%	24.8%
3	31.5%	30.4%
4	14.7%	21.7%
5	4.9%	5.2%
6	0.7%	1.3%



Mean Number of Different Service Delivery Locations Used From Entry to 6 Months By Race and Level of Collaboration



^a $p < .05$



Conclusions

- ▶ **Does child symptomatology change over time in children with severe emotional disturbances who are receiving services through a CMHS-funded system of care?**
 - $B_1 = -4.357$

- ▶ **Are changes in child symptomatology over time systematically related to selected characteristics of the child's background?**
 - **Race**

- ▶ **Are changes in child symptomatology over time systematically related to initial site level characteristics?**
 - **Collaborative/Coordinated**



Future Research

- ▶ **Modeling SOC assessment scores as a time-varying covariate at Level 3**
- ▶ **Missing data**
 - **EM Algorithm**
 - **Multiple Imputation**

