Chapter Four

System Navigation and Clinical Outcomes in a System of Care

Attrition from Children's Mental Health Treatment: A Review of Clinical Research and Practice

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Introduction

There is a large burden of suffering associated with mental health problems in children (Waddell, Offord, Shepherd, Hua, & McEwan, 2002). Studies have indicated that approximately 20% of children and youth may experience mental disorders at any given time (e.g. Breton, et al., 1999; Costello, et al., 1996; Offord, et al., 1987). Incorporating functional impairment—defined as an inability to function at a developmentally appropriate level—into the thresholds for defining mental health problems has led to somewhat lower overall prevalence rates (14% or > 300,000 in Ontario, Canada; Waddell, et al., 2002). The lower rates refer to clinically important disorders that cause both significant symptoms and impairment. Anxiety, attention, conduct, and depressive disorders are the most common types of referral problems (Roberts, Attkisson, & Rosenblatt, 1998; Waddell, & Shepherd, 2002). These conditions have a negative impact on children's development and functioning in the home, school, and community. Many childhood disorders also persist, and can affect eventual adult productivity and functioning (Costello, & Angold, 2000).

It is critical that children receive effective help in order to prevent, and mitigate the escalation of problems. However, it is estimated that 30-60% of children (and their families) end treatment prematurely (Armbruster & Kazdin, 1994; Wierzbicki & Pekarik, 1993). Considering that only 20% of children (4-18 years of age) with mental health disorders receive specialized services[1] (Waddell, et al., 2002), attrition[2] may exacerbate the problem of unmet need for mental health treatment. Conceptually, the loss of children from treatment raises questions about factors that put families at risk for attrition. What are the characteristics of children/families, service providers, and systems that lead to dropping out of care? That some children may not receive services by virtue of dropping out also raises questions in terms of treatment accessibility—how can we ensure that children who drop out get the treatment that they need? Dropping out of real-world clinical care may influence treatment effectiveness, and child and program outcomes. Does treatment attrition dilute the effectiveness of interventions? Importantly, what are the implications of attrition for children, services, and systems of care?

Objectives

The purpose of this paper was to examine the role of attrition from children's mental health treatment in outcome-based research and clinical practice. Specific objectives were to:

1. Identify and summarize factors that predict attrition from children's mental health services; and
2. Examine the implications of attrition for families and service providers from three key perspectives: (a) service accessibility; (b) evidence-based treatment and evaluation; and (c) service delivery within systems-of-care.

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[1] *The term specialized services refers to psychiatric hospital, psychiatric ward in a general hospital, residential treatment centre, group home, partial hospitalization, therapeutic foster care, mental health centre, detoxification unit, outpatient drug/alcohol clinic, case management, private mental health professional, or children's mental health worker.* **Sources**: *Offord, D. R., Boyle, M. H., Szatmari, P., Rae-Grant, N. I., Links, P. S., Cadman, D. T., et al. (1987). Ontario child health study. Six-month prevalence of disorder and rates of service utilization. Archives of General Psychiatry, 44, 832-836; Farmer, E, M., Stangl, D. K., Burns, B. J., Costello, E. J., & Angold, A. (1999). Use, persistence, and intensity: Patterns of care for children's mental health across one year. Community Mental Health Journal, 35(1), 31-46.*

[2] *There is no universally accepted definition of attrition; as used here, attrition refers to a unilateral decision on the part of a child and/or parent to leave treatment/services against the advice of the provider or clinical team. The terms attrition, dropout, and premature termination will be used interchangeably.*

Method / Major Research Literature

A review of the published and "grey" literature was undertaken using several methods: (a) A computer search using Scholars Portal at the University of Toronto, Ontario Canada; (b) Searches through the search engine Google and specific websites focused on children's mental health (e.g. Children's Mental Health Ontario), and associated government sites (e.g. Ministry of Children and Youth Services, United States Department of Health and Human Services, Center for Mental Health Services); (c) Reference sections of identified studies and reviews (articles, reports, books). Computerized searches of specified terms linked to child treatment / services attrition (e.g. dropout, attrition, continuance, adherence) and the children's mental health literature along specified dimensions (e.g. access, outcome). Demographic descriptors, such as ethnicity, gender, and SES were also used.

Findings

Participation in Treatment

Recent evidence has documented a variety of child, family, and service factors that may affect participation in treatment (e.g. Armbruster, & Fallon, 1994; Baruch, Gerber, & Fearon, 1998; Kendall, & Sugarman, 1997). These include, but are not limited to, parental socio-economic status (SES), ethnicity, psychopathology, family dysfunction, and a lack of health insurance (payee status, or cost). The effects of context (e.g. type of agency) on participation has gained some attention given the strong impact systems have on children's health care (Dierker, Nargiso, Wiseman, & Hoff, 2001). However, treatment dropout evidence is largely demographic and descriptive in nature. Findings have typically been based on retrospective analyses—analyses that have examined a common set of determinants (e.g. SES) with the assumption that they apply to all children who terminate treatment regardless of population and context. In this manner, method issues have complicated efforts to develop a composite profile of client, treatment, service, and provider characteristics that lead to attrition. Inconsistent results are likely due to wide variability in sample characteristics, setting, clinic and treatment procedures, and definitions of treatment attendance and adherence (Armbruster, & Kazdin, 1994; Kazdin, 1996).

While research has identified individual-level risk factors (e.g. SES) for treatment dropout, there is little clear discussion on what they may actually *mean* for children and service providers. There is a lack of in-depth, qualitative analyses of family and service provider perceptions of attrition. Studies of attrition need to emphasize the relations between treatment dropout and intervention processes from the perspectives of families and service providers in order to gain a deeper understanding of why children drop out. Experiential variables (e.g. attitudes, expectations, attributions, motivation to participate) may influence the relations between predictors and drop-out (Kazdin, Holland, & Crowley, 1997; Morrissey-Kane, & Prinz, 1999). Such variables would provide conceptual leads on familial treatment decision-making when it comes to dropping out of care. Demographic characteristics, although useful for identifying those at risk, do not address factors related to the experience of treatment that might lead to dropping out. Variables that emerge during treatment (e.g. therapeutic alliance, provider attitudes) may also influence termination decisions (Armbruster, & Kazdin, 1994; Fearing, 2003; Garcia, & Weisz, 2002). A unifying conceptual framework of children's mental health attrition does not exist.

Implications of Attrition

The implications of attrition for families and service providers are apparent upon examination of critical treatment/service and systems issues. For example, the relations between attrition and service use are reflected in unmet need. Research shows clear evidence of unmet need for mental health services for children, including barriers to care, imperfect screening, and limited use of services (Flisher, Kramer, Grosser, et al., 1997; Jensen, & Royeen, 2002; McKay, McCadam, & Gonzales, 1996; Polgar, Stiffman, Horvath, Hadley-Ives, O'Neal, & Pescarino, 2001). These factors result in differential access to care—the situation may be worse for marginalized children and those living in certain regions of due to geographic, economic, and cultural factors that affect service accessibility (Boydell, & Pong, 2003). The problem of

unmet need for children and their families is exacerbated by premature attrition from services. In a study of premature termination from mental health services (Kazdin, et al., 1997), greater perceived barriers to participation in treatment (e.g. economic factors, distance to care, waiting for treatment) predicted early drop-out among children and their families. It is critical that children receive help when, and where they need it the most.

The dilemma faced by research and practice communities is how best to respond to the potentially compromising effects of treatment dropout on the quality of treatment/services. A major threat to the successful dissemination and adoption of evidence-based treatments within the service community is the dilution of treatment strength due to "no show" status, or attrition (Shirk, 2004). Children and their families are unlikely to attain the benefits seen in research settings if they fail to receive an adequate dose of treatment, or if they do not receive it at all (Weersing, & Weisz, 2002). Reviews of outcome research show that change (positive) is greater among children who receive treatment than among those who do not (e.g. Weisz, Weiss, Hann, Granger, & Morton, 1995). However, little evidence is available on the outcome status of children who terminate prematurely (Kazdin, Mazurick, & Siegel, 1994; Kazdin, & Wassell, 1998). Do some children improve in functioning despite their dropout status? Therapeutic change among dropouts is rarely evaluated because of the difficulty in obtaining post-treatment measures. Furthermore, many treatments still need to be evaluated, and long-term follow-up from controlled clinical trials is largely unavailable (Weisz, 2003). Real-world factors that researchers view as impediments (e.g. dropout) need to be included in the treatment evaluation process if interventions are to work well in practice (Shirk, 2004).

Due to the fact that system-level characteristics vary drastically among mental health treatment programs (Rivard, & Morrissey, 2003), their effects on attrition have not been well mapped. This is despite the fact of improved access to services indicated in evaluations of system-of-care initiatives (e.g. Hamner, Lambert, & Bickman, 1997; Schlenger, Etheridge, Hansen, Fairbank, & Onken, 1992). Inconsistent attendance and high attrition rates may hinder efforts to systematically evaluate the effectiveness of services and programs for children with mental health problems. Clinicians and researchers have argued that treatment attrition affects the delivery of services through increased costs and unfulfilled appointment hours (e.g. Kazdin, 1996). This has a negative impact on the effectiveness and efficiency of children's mental health services across all sectors (e.g. health, education; Dierker, et al., 2001). However, very few studies have addressed attrition and retention within a system-of-care. This raises questions surrounding the whereabouts and experiences of families upon attrition from service. Rather than a single path of service use, families likely negotiate multiple pathways and take a circuitous route. Importantly, families may or may not receive subsequent treatment upon termination—treatment that is needed.

Conclusions

There is no clear, composite profile of those children and families who drop out of mental health treatment. The diverse client, treatment, service, and provider factors that affect attrition need to be understood in the *context* of why children and families drop out. However, very little research has been driven by conceptual models that may help explain why families leave services prematurely (Armbruster, & Kazdin, 1994), or by what processes they interface with treatment. Understanding attrition from the perspectives of families and service providers will have critical implications for the adoption of evidence-based interventions by indirectly linking knowledge on experience, with method of treatment and service delivery. An integration of individual-level risk factors and experiential constructs into a coherent, unifying framework is necessary in order to fully understand attrition. Integrative research and practice-based models of attrition will complement current strategies (see Staudt, 2003) aimed at promoting treatment attendance.

The reality is that no treatment can be effective if those children who need it do not access it due to dropping out of care. Despite the documented influence of many factors on treatment attendance, evaluations of care need to account for attrition if treatments are to work well in practice. More research should be focused on the development and testing of treatment methods in naturalistic settings (Weisz, Chu, & Polo, 2004). Lastly, the role of attrition within systems-of-care requires further evaluation. Children with mental health difficulties may be referred to many types of organizations and services after initial contact with the system. Children with complex problems may use multiple services. Integrated systems of multiple service use and longitudinal data are required in order to more fully assess the impact that attrition has on program/service and child outcomes.

References

Armbruster, P., & Fallon, T. (1994). Clinical, sociodemographic, and systems risk factors for attrition in a children's mental health clinic. *American Journal of Orthopsychiatry, 64*, 577-585.

Armbruster, P., & Kazdin, A. E. (1994). Attrition in child psychotherapy. In T. H. Ollendick & R. J. Prinz (Eds.), *Advances in Clinical Child Psychology*, Vol. 16 (pp. 81-108). New York: Plenum Press.

Baruch, G., Gerber, A., & Fearon, P. (1998). Adolescents who drop out of psychotherapy at a community-based psychotherapy centre: A preliminary investigation of the characteristics of early drop-outs, late drop-outs, and those who continue treatment. *British Journal of Medical Psychology, 71*, 233-245.

Boydell, K. M., & Pong, R. W. (2003). *The rural perspective on continuity of care: Pathways to care for children with emotional and behavioural disorders*. Ottawa, ON: Canadian Health Services Foundation.

Breton, J. J., Bergeron, L., Valla, J. P., Berthiaume, C., Gaudet, N., Lambert, J., et al. (1999). Quebec child mental health survey: Prevalence of DSM-III mental health disorders. *Journal of Child Psychology and Psychiatry, 40*, 375-384.

Costello, E. J., & Angold, A. (2000). Developmental psychopathology and public health: Past, present and future. *Developmental Psychopathology, 12*, 599-618.

Costello, E. J., Angold, A., Burns, B. J., Stangl, D. K., Tweed, D. L., Erkanli, A., et al. (1996). The Great Smoky Mountains Study of Youth: Goals, design, methods, and the prevalence of DSM-III-R disorders. *Archives of General Psychiatry, 53*, 1129-1136.

Dierker, L. N., Nargiso, J., Wiseman, R., & Hoff, D. (2001). Factors predicting attrition within a community-initiated system of care. *Journal of Child and Family Studies, 10*(3), 367-383.

Fearing, T. G. (2003). The role of relational factors in psychotherapy dropout. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 64*(1-B), 416.

Flisher, A. J., Kramer, R. A., Grosser, R. C., et al. (1997). Correlates of unmet need for mental health services by children and adolescents. *Psychological Medicine, 27*, 1145-1154.

Garcia, J. A., & Weisz, J. R. (2002). When youth mental health care stops: Therapeutic relationship problems and other reasons for ending youth outpatient treatment. *Journal of Consulting and Clinical Psychology, 70*, 439-443.

Hamner, K. M., Lambert, E. W., & Bickman, L. (1997). Children's mental health in a continuum of care: Clinical outcomes at 18 months for the Fort Bragg demonstration. *Journal of Mental Health Administration, 24*, 465-471.

Jensen, G. M., & Royeen, C. B. (2002). Improved rural access to care: Dimensions of best practice. *Journal of Interprofessional Care, 16*(2), 117-128.

Kazdin, A. E. (1996). Dropping out of child psychotherapy: Issues for research and implications for practice. *Clinical Child Psychology and Psychiatry, 1*, 133-156.

Kazdin, A. E., Holland, L., & Crowley, M. (1997). Family experience of barriers to treatment and premature termination from child therapy. *Journal of Consulting and Clinical Psychology, 65*(3), 453-463.

Kazdin, A. E., Mazurick, J. L., & Siegel, T. C. (1994). Treatment outcome among children with externalizing disorder who terminate prematurely versus those who complete psychotherapy. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 549-557.

Kazdin, A. E., & Wassell, G. (1998). Treatment completion and therapeutic change among children referred for outpatient therapy. *Professional Psychology: Research and Practice, 29*, 332-340.

Kendall, P. C., & Sugarman, A. (1997). Attrition in the treatment of childhood anxiety disorders. *Journal of Consulting and Clinical Psychology, 65*(5), 883-888.

McKay, M., McCadam, K., & Gonzales, J. (1996). Addressing the barriers to mental health services for inner city children and their caretakers. *Community Mental Health Journal, 32*(4), 353-361.

Morrissey-Kane, E., & Prinz, R. J. (1999). Engagement in child and adolescent treatment: The role of parental cognitions and attributions. *Clinical Child and Family Psychology Review, 2*(3), 183-198.

Offord, D. R., Boyle, M. H., Szatmari, P., Rae-Grant, N. I., Links, P. S., Cadman, D. T., et al. (1987). Ontario child health study. Six-month prevalence of disorder and rates of service utilization. *Archives of General Psychiatry, 44*, 832-836.

Polgar, M., Stiffman, A., Horvath, V., Hadley-Ives, E., O'Neal, J., & Pescarino, R. (2001). *What impedes youth mental health service youth*? Presented at the 13th Annual Conference Proceedings, Research and Training Center for Children's Mental Health, Tampa, Florida.

Rivard, J. C. & Morrissey, J. P. (2003). Factors associated with interagency coordination in a child mental health service system demonstration. *Administration and Policy in Mental Health, 30*(5), 397-415.

Roberts, R. E., Attkisson, C. C., & Rosenblatt, A. (1998). Prevalence of psychopathology among children and adolescents. *American Journal of Psychiatry, 155*, 715-725.

Schlenger, W. E., Etheridge, R. M., Hansen, D. J., Fairbank, D. W., & Onken, J. (1992). Evaluation of state efforts to improve systems of care for children and adolescents with severe emotional disturbances: The CASSP (Child and Adolescent Service System Program) initial cohort study. *Journal of Mental Health Administration, 19*(2), 131-142.

Shirk, S. R. (2004). Dissemination of youth EST's: Ready for prime time? *Clinical Psychology: Science and Practice, 11*(3), 308-312.

Staudt, M. M. (2003). Helping children access and use services: A review. *Journal of Child and Family Studies, 12*(1), 49-60.

Waddell, C., Offord, D., Shepherd, C., Hua, J., & McEwan, K. (2002). Child psychiatric epidemiology and Canadian public policy making: The state of the science and the art of the possible. *Canadian Journal of Psychiatry, 47*(9), 825-831.

Waddell, C., & Shepherd, C. (2002). *Prevalence of mental disorders in children and youth*. Vancouver, B.C: Mental Health Evaluation and Community Consultation Unit, University of British Columbia.

Weersing, V. R., & Weisz, J. R. (2002). Mechanisms of action in youth psychotherapy. *Journal of Child Psychology and Psychiatry, 43*, 3-29.

Weisz, J. R. (2003). *Psychotherapy for children and adolescents: Evidence-based treatments and case examples*. Cambridge, UK: Cambridge University Press.

Weisz, J. R., Chu, B. C., & Polo, A. J. (2004). Treatment dissemination and evidence-based practice: Strengthening intervention through clinician-researcher collaboration. *Clinical Psychology: Science and Practice, 11*(3), 300-307.

Weisz, J. R., Weiss, B., Hann, S. S., Granger, D. G., & Morton, T. (1995). Effects of psychotherapy with children and adolescents revisited: A meta-analysis of treatment outcome studies. *Psychological Bulletin, 117*, 450-468.

Wierzbicki, M., & Pekarik, G. (1993). A meta-analysis of psychotherapy dropout. *Professional Psychology: Research and Practice, 24*, 190-195.

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The Effects of Parent Participation on Child Psychotherapy Outcomes: A Meta-Analytic Review

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Introduction

Parents seeking psychological services for their child have the daunting task of choosing the most appropriate and effective type of intervention. As one estimate suggests, there are more than 500 independent psychotherapy techniques in use for children. Consequently, recent child psychotherapy research has sought to identify those "evidence-based" treatments that have demonstrable effects across rigorously controlled randomized clinical trials. Of these, individual therapies, such as interpersonal psychotherapy, have demonstrated robust effects along with parent-only and combined treatments, such as parent management training and cognitive-behavioral therapy (Kazdin, 2003).

In order to bring some organizational structure to the numerous child therapies, meta-analyses have examined treatment effectiveness according to several classification systems including theoretical orientation, length of therapy, and structure of therapy (Kazdin, Bass, Ayers, & Rodgers, 1990; Weisz, Weiss, Alicke, & Klotz, 1987; Weisz, Weiss, Han, Granger, & Morton, 1995). However, there remains a lack of attention among researchers to the comparative efficacy of individual child treatments, parent-only interventions, and combined parent-child treatments.

Despite the limited empirical evidence supporting one method over the other, research findings indicate increased utilization of parent participation in children's treatment by practitioners. Survey results show that almost 80% of respondents indicated that they routinely include children as well as parents as treatment participants (Kazdin, Siegel, & Bass, 1990). Empirical support is needed to provide clinical guidance regarding when parent-only, individual, or combined treatment is most appropriate, as well as to further explore potential moderating variables that influence treatment efficacy.

Method

This study intended to evaluate the effects of parent participation on child psychotherapy outcomes through a meta-analytic review. Studies were included that offered a direct comparison of an individual child treatment group to either a combined parent-child or family therapy treatment, or a parent-only treatment group. Computer searches of the databases PsychInfo, Medline, and ERIC were conducted using a combination of search terms from several previous meta-analyses for publications from 1984 through March 2003. In addition, the Journal of Consulting and Clinical Psychology was reviewed by hand from years 1994 to March 2003. Also, references cited by Weisz et al. (1995) were reviewed and included if they met the selection criteria. Finally, a message was posted requesting unpublished studies on the list-serves hosted by the Society for Psychotherapy Research and Division 53: the Association of Clinical Child Psychology of the American Psychological Association.

Cohen's d (Cohen, 1977) was calculated for each study as an index of the size and direction of the treatment effect. Effect sizes were combined across studies using weights calculated in part by the sample size of each study (Shadish & Haddock, 1994; Hedges & Olkin, 1994). A test of homogeneity of variance of effect sizes was conducted, which determined whether the variability of a group of effects was consistent with or greater than what would be expected based on the sampling variation (Hedges & Olkin, 1994).

Results

From the computer database search method, a total of 4,565 journal articles, book chapters, conference presentations, and dissertations were initially identified. The issue-by-issue search of the Journal of Consulting and Clinical Psychology resulted in a total of nine additional studies. No studies came from either the references cited by Weisz et al. (1995) or postings on the listserves.

After review of abstract and methodology of each of these studies, forty-two original psychotherapy outcome studies were identified, with a total of 4,189 subjects. Of these, one study was based on a comparison of an individual child therapy group to a parent-only treatment group, thirty-four studies compared an individual child therapy group to a combined child and parent treatment group (this could be either family therapy or a treatment group that included simultaneous participation in individual child treatment and parent-only intervention), while seven studies compared all three types of treatment groups. See Table 1 for a summary of descriptive characteristics of the sample of studies.

Results indicate that combined treatments were more effective than individual child treatments, with an average weighted effect size within the moderate range ($d = .25$, $SD = .042$). No differences were found between individual child and parent-only interventions ($d = .13$, $SD = .18$). Tests of homogeneity of variance were significant for both the comparison of child-only to parent only treatments $Q(7) = 15.175$, $p < .05$, and child-only to combined treatments $Q(40) = 139.201$, $p < .05$. Therefore, moderator analyses were conducted among the studies that compared child-only to combined treatments to

Table 1
Descriptive Variables Across Studies

Subjects	4,189
Mean age	11.66
Percentage male subjects	64.14
Age range (percentage)	
Preschool	9.5
Elementary School	26.2
Adolescent	38.1
Combined Elementary School and Adolescent	26.2
Child only vs. parent-only treatment	1
Child only vs. combined treatment	34
Child only vs. parent only vs. combined treatment	7
Child therapy orientation (percentage)	
Cognitive-behavioral	69.0
Eclectic	16.7
Client-centered/dynamic	11.9
Systemic	2.4
Combined therapy orientation	
Cognitive-behavioral	63.4
Eclectic	4.9
Client-centered/dynamic	2.4
Systemic	29.3
Parent-only therapy orientation	
Cognitive-behavioral	100
Mean treatment duration (number of sessions/weeks)	
Child-only	17/14.7
Combined	21.9/13.8
Parent-only	11.5/14.7
Mean percentage race	
Caucasian subjects	65.3
African American subjects	21.0
Other subjects	26.0
Type of presenting problem (percentage)	
Externalizing	57.1
Internalizing	23.8
Abuse	4.8
Other	7.1
Both internalizing and externalizing	7.1

identify predictors of treatment outcome. When entered individually, of all potential moderator variables examined in previous child psychotherapy meta-analyses, (presenting problem, treatment orientation, methodological quality, difference in number of therapy sessions, outcome measure, and child age), child treatment orientation was marginally significant as a unique predictor, $R = .286$, $F(1, 39) = 3.49$, $p = .69$. When mean effect sizes of cognitive-behavioral and non-cognitive behavioral child-only treatments were examined, cognitive-behavioral treatments had a lower average effect size ($d = .186$) compared to non-cognitive behavioral treatments ($d = .522$), suggesting that cognitive-behavioral child-only treatments are closer to the effectiveness of combined treatments (which are overall more effective) than non-cognitive-behavioral child-only treatments. When all other potential moderators were entered into a stepwise regression analysis, no significant predictors were identified.

Study findings suggest that including parents in the psychotherapeutic treatment of children is beneficial. More research is needed that offers these specific treatment comparisons to offer more specific treatment recommendations.

Conclusions

Results suggest that, with an effect size of .25, the average family receiving psychotherapy that included both parent and child participation was better off than 56% of children receiving individual interventions. This finding is consistent with the median probability calculated by Grissom's (1996) meta-meta-analysis when comparing two active treatment groups. Conversely there was no difference in treatment effectiveness when child-only and parent-only interventions were compared. Generalizability of results, however, is tempered by the lack of homogeneity among effect sizes for both comparisons as well as the limited number of studies comparing parent to child only interventions, which precluded moderator analysis.

These findings seem to support in part the treatment strategies of family systems theorists, that treatment involving participation of all members of a family system are more effective than treatments that target either unit (children or parents) individually. The results suggest that parent participation in child psychotherapy treatments is most effective when children are also active in treatment, regardless of age or type of presenting problem. However, there remain unknown moderator variables adding unexplained variance that would also contribute to these findings once identified. It is intended that these results will ultimately assist clinicians in making decisions when incorporating parents in the treatment of children.

References

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (Rev. ed.). New York: Academic Press.

Grissom, R. J. (1996). The magical number .7±.2: Meta-meta-analysis of the probability of superior outcome in comparisons involving therapy, placebo, and control. *Journal of Consulting & Clinical Psychology, 64*(5), 973-982.

Hedges, L. V., & Olkin, L. (1994). *Statistical methods of meta-analysis*. San Diego: Academic Press.

Kazdin, A. E. (2003). Psychotherapy for children and adolescents. In M. J. Lambert (Ed.) *Bergin and Garfield's handbook of psychotherapy and behavior change* (5th ed.), (pp. 543-589). New York: John Wiley & Sons, Inc.

Kazdin, A. E., Bass, D., Ayers, W. A., & Rodgers, A. (1990). Empirical and clinical focus of child and adolescent psychotherapy research. *Journal of Consulting and Clinical Psychology, 58*, 729-740.

Kazdin, A. E., Siegel, T. C., & Bass, D. (1990). Drawing on clinical practice to inform research on child and adolescent psychotherapy: Survey of practitioners. *Professional Psychology: Research and Practice, 21*, 189-198.

Shadish, W. R., & Haddock, C. K. (1994). Combining estimates of effect sizes. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 261-281). New York: Russel Sage Foundation.

Weisz, J. R., Weiss, B., Alicke, M. D., & Klotz, M. L. (1987). Effectiveness of psychotherapy with children and adolescents: A meta-analysis for clinicians. *Journal of Consulting and Clinical Psychology, 55*, 542-549.

Weisz, J. R., Weiss, B., Han, S. S., Granger, D. A., & Morton, T. (1995). Effects of psychotherapy with children and adolescents revisited: A meta-analysis of treatment outcome studies. *Psychological Bulletin, 117*, 450-468.

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Measuring Predicted Individual Improvement among Children Receiving Community-Based System of Care Services

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Introduction

The system of care (SOC) approach is the most widely employed method of mental health service delivery to children and adolescents with severe behavioral and emotional disturbances in the United States (Stroul & Friedman, 1986; Stroul & Friedman, 1994). The SOC program is designed to optimally serve children and adolescents' needs; and policy makers that adopt SOC principles clearly have the best interests of children in mind. However, without outcome research on SOC programs it is impossible to determine if the SOC framework is effective in terms of individual improvement, implementation, and dissemination in real world settings.

Prior research indicates that the recipient of care and his or her presenting characteristics and demographics play a role in community-based treatment outcome (Greenbaum et al., 1998). Therefore, any approach to outcomes management in a SOC should include modeling of outcomes at the individual level. In addition, because the SOC model was designed to be a broad philosophy based on a set of values and principles, SOCs are not intended to fit one specific population, and the concept does not utilize strict therapeutic guidelines and does not advocate a particular model of prevention or intervention (e.g. empirically supported treatments) or organizational practices. It is reasonable to assume that within the context of the multilayered SOC system, service providers operating under the SOC banner approach the implementation of SOC principles and the utilization of empirically supported treatments with significant variability. Therefore, outcomes should also be modeled at the provider/agency level.

The aim of the present study is to assess the real world effectiveness for individuals enrolled in a statewide program that purports to adhere to SOC principles. The two units of analysis are (a) youth receiving a variety of therapeutic interventions and (b) their service providers operating within the context of SOC. A model containing these two units of analysis has two primary applications: (1) to model variability in youth outcomes (slopes) as a means of providing individualized expectations for improvement for every unique youth in the system and; (2) to model variability in outcomes across providers of care as a point of departure for quality improvement efforts. In addition, variability in outcome measures at the point of initial contact (intercepts) is obtained in order to assess any baseline differences that may exist between individuals. A model for the prediction of individualized outcome data for adolescents involved in SOC would benefit policy makers, clinicians, and families by providing expectations for change tailored to the individual. Furthermore, interpretation of the results could be used to modify services provided by SOC agencies.

Method

The overall sample consisted of 3,950 children and adolescents who were in state custody; they were referred to services within a SOC through the Illinois Department of Children and Family Services (DCFS) between September 1999 and December 2004. DCFS takes youth who are Illinois citizens into state custody when caregiver abuse (physical or sexual) and/or neglect have been indicated by a caseworker. After a comprehensive healthcare screen, DCFS becomes legally responsible for all of the youths' needs, including the provision of safe and stable placements as well as medical and mental health treatment.

The total sample was 55% male. The average age of the clients at the point of initial contact was 11.3 years old. Race/ethnicity was not reported in the vast majority of cases (90%); the demographics of the cases in which race was reported were; African American 71%, European American 21%, Latino/a 4%, Asian American 3%. The most common diagnoses made after the point of initial contact were Adjustment Disorder, Oppositional Defiant Disorder, and Attention Deficit/Hyperactivity Disorder.

Child outcomes were assessed using the Child and Adolescent Needs and Strengths (CANS; Lyons, 1999). The CANS was developed to assess clinical and environmental factors related to adolescent development. The CANS instrument evaluates the needs and strengths of a child or adolescent across multiple domains and is used as an assessment, decision-support and outcome measure instrument (State of Illinois DCFS, 2003). The CANS consists of 25 dimensions across five factors: symptoms, risk factors, functioning, comorbid factors, and placement/system factors. The average score of the dimensions in each factor was used in the present study in order to obtain average factor scores across each of the five factors. Severity ratings are based on a 0 to 3 scale. Detailed descriptions for what constitutes each numerical rating for each dimension are provided in the CANS manual.

Results

During the period of the study (2001 to 2004), 598 of the children in the total sample met the requirements for inclusion in the study. Eligible clients were those had data for the outcome measurement at three or more points in time within a single agency. If they received services from multiple agencies, they must have been administered the outcome measure three or more times at one of the agencies. When there were multiple treatment episodes within the same agency, at least one episode must capture the minimum three data points. These clients received treatment from 26 different providers. In cases where there were three or more data points at multiple agencies or multiple treatment episodes, random selection determined which set of data was analyzed for the present study.

The outcome measurement was administered by trained professionals at the agency in which the client was receiving treatment at intake, during the course of treatment, and at the conclusion of treatment. The collection of data at multiple time points allowed for the use of hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992).

A three level HLM was conducted in order to analyze the differences in maladaptive behaviors over time. The problem behaviors factor of the CANS was utilized as the outcome measure. A model was first tested examining a level one null model; this model consists of treatment days (β_0) plus random variability around this average (representing within-person variability) plus error. There was significant variability in slopes (i.e. random effects, or slopes as outcomes) between individuals ($\chi^2 = 1027.38$, $p < .001$). The children and adolescents receiving services varied on their amount of improvement over time. There was also significant variability in the intercepts (i.e. random effect, or intercepts as outcomes) at level one ($\chi^2 = 1954.05$, $p < .001$.). The level of problem behaviors differed significantly between individuals in the present sample. There was a significant drop in problem behavior scores over time ($\gamma = -.003$, $t = -6.09$, $p < .001$). The average equation for the sample of 595 clients, without any predictors (i.e., unconditional model), was equal to Y = 6.92 - .003 (Days of treatment)

The second level model included stable characteristics, such as CANS factor scores at time one, age and gender. The results of the trimmed HLM with only the significant level two factors included are presented in Table 1. In the results the fixed effects are estimated with robust standard errors because the sample size is large (i.e. level two units greater than 50; Liang & Zieger, 1986).

The level three model assessed the differences in problem behavior that could not be explained by level one or level two factors. Therefore, these differences could be attributed to variability in agencies. At level three, the third level of the HLM analysis (random effect) was significant ($\chi^2 = 3003.78$, $p < .001$, see Table 1). There is evidence of leftover variance not explained by the individual, clinical, or demographic variables. After accounting for first and second level factors, the individual child remained significantly associated with problem behavior slopes. In addition, there was significant variability around the average problems intercept as a function of agency ($\chi^2 = 363.43$, $p < .001$). Agencies differed on the amount of average client improvement.

Table 1
Three-Level Analysis Using a Linear Model of Treatment Days, Trimmed Model

Fixed Effect	*Coefficient*	*se*	*t Ratio*	*p value*
Level 1				
Average problem behavior	-.003	.001	-6.09	.001
Level 2				
Problem behavior intercept	.950	.028	33.35	.001
Problem behavior slope	-.002	.001	-7.95	.001
Risk behavior slope	.001	.001	3.96	.001
Age slope	.001	.001	2.99	.003
Gender slope	.001	.001	3.34	.001

Random Effect	*Var. Comp.*	*df*	χ^2	*p value*
Time as a function of child	.001	563	3003.78	.001
Average problems as a function of agency	1.906	22	363.425	.001
Time one problem behaviors as a function of agency	.006	22	44.718	.003
Time as a function of agency	.001	22	38.405	.016

Conclusion

The results of the level one HLM analysis suggest that children and adolescents receiving community based SOC services improve over time, although the gains are modest. According to the coefficients obtained from the study, on it takes the average child about a year (333 days) to go down one point in the problem behaviors dimension of the CANS (the outcome measurement). The level two results assessed differences that could be attributed to baseline clinical severity and demographic factors. The results indicated that higher initial problem behavior scores were associated with increased rate of improvement. The most likely explanation for this finding is the regression to the mean effect. Risk behaviors, including danger to self, danger to others, and elopement, were associated with slower average rate of improvement. In addition, older adolescents improved more slowly on average than younger children. The level three results indicate that agencies differ on the both the level of problem behaviors at time 1 and the decrease in problem behaviors. Therefore, although certain providers may have clients with higher initial problem behaviors, there is a difference in the reduction of problem behaviors between agencies, even after controlling for initial problem behaviors. The present study does not assess specific agency/provider factors that are associated with clients performing better or worse than expected based on their level two results (i.e. use of empirically supported treatments, adherence to SOC principals, etc.). In order to aid providers in quality improvement efforts, future research should evaluate the agency variables that are associated with variation in client outcomes.

References

Bryk, A. S., & Raudenbush, S.W. (1992). *Hierarchical lineal models: Applications and data analysis methods.* Newbury Park, CA: Sage.

Greenbaum, P. E., Dedrick, R. F., Friedman, R. M., Kutash, K., Brown, E. C., Lardieri, S. P. & Pugh, A. M. (1998). National adolescent and child treatment study (NACTS): Outcomes for children with serious emotional and behavioral disturbance. In M. Epstein, K. Kutash, & A. Duchnowski (Eds.), *Outcomes for children and youth with emotional and behavioral disorders and their families: Programs and evaluation best practices* (pp. 21-54). Austin, TX: Proed

Liang, L., & Zeger, S. (1986). Longitudinal data analysis using generalized linear models. *Biometrika, 73*, 13-22.

Lyons, J. S. (1999). *The Child and Adolescent Needs and Strengths for children with mental health challenges.* Winnetka, IL: Buddin Praed Foundation.

State of Illinois Department of Child and Family Services. (2003). *System of care (SOC) program plan.* Retrieved August 15, 2005 from http://dcfswebresource.prairienet.org/downloads/cfs/

Stroul, B. A., & Friedman, R. M. (1986). *A system of care for children and youth with severe emotional disturbances.* Washington, DC: Georgetown University Child Development Center, CASSP Technical Assistance Center.

Stroul, B. A., & Friedman, R. M. (1994*). A system of care for children and youth with severe emotional disturbances (Revised ed.).* Washington, DC: Georgetown University Child Development Center, CASSP Technical Assistance Center.

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Predicting the Treatment Prognosis of the Systems of Care Clients Based on their Baseline Ohio Scale Scores

Jothi S. Themozhi

Introduction

Exploring the relationship between clients' problem severity and functioning strength levels with clients' clinical outcome is an ongoing research agenda intent on identifying better service structure. Many investigators have utilized different clinical assessment tools to predict clients' clinical outcomes (Burnam, 1996; Green et al., 2001; Stewart & Ogles 2003; Fields & Ogles, 2004). The analysis described in this summary also attempts to describe this relationship through examining Ohio Scale Clinical scores of children receiving services through systems of care (SOC) in Oklahoma.

The Oklahoma Systems of Care Program for Children was initiated in 2000 by the joint effort of state child-serving agencies to promote the development of community-based systems of care for children with serious emotional disorders and their families. Oklahoma SOC is also one of the Center for Mental Health Services' Comprehensive Community Mental Health Services Program for Children and Their Families grant funded communities. This study specifically focused on a group of nine Oklahoma SOC sites that started using the Ohio Scale as the clinical instrument from FY 2005 onwards to assess their clients' problem severity and functioning strength.

Methodology

A decision was made by the Oklahoma SOC evaluation committee to replace previously used clinical assessment tools with the Ohio Scales developed by Ogles and colleagues. The Ohio Scales (Ogles, Melendez, Davis, & Lunnen, 1998, 2000, 2001 is a practical, brief, easy to administer, psychometrically sound instrument that can be given at regular intervals throughout the treatment of children and adolescents. It has parallel rating forms for youth (12-17 years), primary caregivers, and agency workers. Each of the 20 items on Problem Severity and Functioning Strength are rated for frequency during the past 30 days. Generally, a high score on the Problem Severity scale is considered to be more problematic (i.e., having more frequent problems), while a low score on the Functioning Strength scale is considered to reflect more impairment in the functioning level of the child. On the Total Problem Severity Scale, a score of 30 and above means the child has clinically meaningful problem behaviors. Similarly, a Total Functioning Strength Score of 40 and below means clinically meaningful impairment in functioning of the client.

From FY 2005 onwards, all SOC clients were assessed by all three versions of the Ohio Scales. This research specifically examines the baseline assessment results of the agency worker version Ohio Scale (designed for youth ages 5-18). The number of clients included in this analysis is 357 who were enrolled in the program from FY 2005 onwards until the last day of July 2005. Based on their baseline Problem Severity and Functioning Strength scores, the clients were grouped into four different groups: (1) Clinically Severe, 42%; (2) Functioning Strength, 11%; (3) Less Problems, 10%, and; (4) Less Severe 37% (see Table 1).

Table 1
Client Group Categories

Problem Severity Scale at:	Functioning Strength Scale at:	Group	Description
1. Clinical Level	Clinical Level	P-Clinical & F-Clinical	Clinically Severe
2. Clinical Level	Non-clinical Level	P-Clinical & F-Non-Clinical	Functioning Strength
3. Non-clinical Level	Clinical Level	P-Non-Clinical & F-Clinical	Less Problems
4. Non-clinical Level	Non-clinical Level	P-Non-Clinical & F-Non-Clinical	Less Severe

Notes: **P** = Problem Severity Scale   **F** = Functioning Strength Scale   **Clinical** = Scores at Clinical Level
Non-Clinical = Scores at Non-Clinical Level

The demographic features of clients in these four groups were analyzed in order to understand the differences among them. These clients were tracked in order to determine their length of stay in the program, or their reason for discharge if they separated from the program.

Findings

There were no significant differences among the distribution of characteristics, such as: median age, gender, ethnicity, diagnosis, psychosocial environmental needs, referral sources, average days living in community 90 days prior to baseline assessment, family income level, and custody status among the four different groups. However, the grouping showed a difference in graduation outcomes. Graduation is the successful separation of the client from the program after reaching the treatment goals that were devised for the wraparound and treatment plans.

The children with problem scores that were at the non-clinical level tended to graduate at a higher rate than children with problem scale scores at the clinical level. Also, children with problem severity scores at clinical level tended to drop-out of the program at a higher rate when compared with the children with problem scale scores at the non-clinical level. These dropouts were either due to family preference or official withdrawal from the SOC services, or due to non-compliance and unofficially leaving the program by avoiding contact with the program personnel (see Table 2).

Table 2
Rate of Discharge by Reason by Group

Discharge Reasons	Group 1: P-Clinical & F-Clinical	Group 2: P-Clinical & F-Non-Clinical	Group 3: P-Non-Clinical & F-Clinical	Group 4: P-Non-Clinical & F-Non-Clinical
Graduated	17%	14%	33%	30%
Family Withdrew	20%	29%	10%	14%
Grew too Old	1%	0%	0%	0%
Moved out of community	11%	21%	10%	7%
Non-compliant	29%	29%	14%	33%
Other/unknown	11%	0%	29%	12%
Referred to Other program	10%	7%	5%	3%
	100%	100%	100%	100%

Discussion

These findings suggest that if the client's problem scale is at a clinical level (i.e. a Problem Severity score of 30 and above), then more effort is needed to retain that child (and the family) in the program. Conversely, it is important to recognize the service delivery implications if graduation rates are higher for those clients who have their problem severity score at the non-clinical level (i.e. Problem Severity score 29 and below)

The prior section explored the use of unweighted combination of scale scores to discriminate between children who were having different levels of functioning strength and problem severity. It is possible that weighted combinations of scores might produce better discrimination. However this exploratory research finding is still valuable for making better decisions about how to help each child with particular problem severity and functional strength levels. Other variables, such as observational data, family constellation, developmental measures, and biomedical conditions, might also be found to predict intervention outcomes. These variables could be used in conjunction with the Ohio Scale scores to identify children expected to have poor outcomes and then to develop better ways of helping them.

References

Burnam, M. A. (1996). Measuring outcomes of care for substance use and mental disorders. In: D. M. Steinwachs, L. M. Flynn, G. S. Norquist, et al., (Eds), *New directions for mental health services, no. 71: Using client outcomes information to improve mental health and substance abuse treatment,* (pp. 3-18), San Francisco: Jossey-Bass.

Fields, S. A., & Ogles, M. B. (2004). Evaluating a continuum of care with Ohio Scales, In C. Newman, C. Liberton, K. Kutash, & R. M. Friedman (Eds.), *The 16th Annual Research Conference Proceedings, A Systems of Care for Children's Mental Health: Expanding The Research Base,*. (pp. 469-473). Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, Research and Training Center for Children's Mental Health.

Green, J., Kroll, L., Imrie, D., Frances, F. M., 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.

Ogles, B. M., Melendez, G., Davis, D. C., & Lunnen, K. M. (1998). *The Ohio youth problem, functioning, and satisfaction scales: Technical manual.* Unpublished Document. Athens, OH: Ohio University.

Ogles, B. M., Melendez, G., Davis, D. C., & Lunnen, K. M. (2000). *The Ohio Youth problem, functioning and satisfaction scales: Technical manual* [pdf manual]. Ohio University. Retrieved October, 2005, from http://oak.cats.ohiou.edu/~ogles/ostechmanual.pdf

Ogles, B. M., Melendez, G., Davis, D. C., & Lunnen, K. M. (2001). The Ohio Scales: Practical outcome assessment, *Journal of Child and Family Studies, 10*, 100-212.

Stewart, K. R. & Ogles, B. M., (2003). Using Outcome Data to Inform Practice. In C. Newman, C. Liberton, K. Kutash, & R. M. Friedman (Eds.), *The 15th Annual Research Conference Proceedings, A Systems of Care for Children's Mental Health: Expanding The Research Base,* (pp. 469-473). Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, Research and Training Center for Children's Mental Health.

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Differential Effectiveness: A Closer Look at Home-Based Treatment Responders

Katherine E. Grimes
Brian Mullin

Introduction

Home and community-based treatments for children and adolescents with serious emotional disturbance have received attention as possible alternatives to more restrictive, out-of-home placements (Burns, Farmer, Angold, Costello & Behar, 1996; Evans, Huz, McNulty, & Banks 1996). While program structure may vary from site to site, the conceptual underpinning for home based interventions, influenced by the Child and Adolescent Services System Program (CASSP) principles, appears consistent for a variety of programs reporting positive youth outcomes. This conceptual foundation includes: (a) recognition of the primary role of the family in the care of the child, (b) importance of access to clinically intensive services, integrated within the child and family team, and (c) individualized, strength-based work with the child which allows care to be delivered in the least restrictive setting (Demidovich & Woolston, 2004; Grimes, 2004; Sheidow & Woodford, 2003). As further research is undertaken to augment the evidence base for the effectiveness of home and community treatment, it is timely to evaluate the range of responses to this treatment, with the particular question of what differentiates the youth who benefit most from this type of treatment from those who do not.

Method

The Mental Health Services Program for Youth (MHSPY) is a demonstration project for a specific clinical intervention that integrates home and community-based treatment for Medicaid youth ages three through eighteen years who have severe, documented, mental health impairment and are either currently in, or at risk for, out-of-home placement (Grimes & Mullin, 2006). Data analysis occurs via a longitudinal, multi-wave study design, with results stratified by child age, race/ethnicity, sex, intervention site and source of referral. Secondary analysis for this responder vs. non-responder comparison study was conducted on results for participants from the five urban areas around Boston, where the MHSPY program currently operates. Two communities have had access to the intervention for over seven years, with MHSPY available to the other three communities for the past three years.

MHSPY members who were no longer enrolled as of July 1, 2005 were divided into a group of graduates and a group of those who disenrolled for other reasons. Those who *unambiguously* benefited from participation in the program, from the perspective of their child and family Care Planning Teams, were designated as "graduates" because they have *completed the mission* identified for them by their families upon enrollment; in this study, these youth are referred to as "responders" (*n* = 75). Other youth, who have also disenrolled from the program but whose Care Planning Teams did not feel had graduated, for a variety of reasons (e.g., the family moved, youth entered a residential program, youth lost Medicaid coverage), are identified in this study as "non-responders" (*n* = 54). The combined tally of those no longer enrolled in the program yields a total of 129 children or adolescents.

Programmatic data, including demographic information and referral source, were collected from all study participants at program entry. Self-report was used for race/ethnicity data. At baseline and every six-months, Child and Adolescent Functional Assessment Scale (CAFAS; Hodges 1998) scores were collected throughout enrollment to evaluate clinical progress. Length of stay—or exposure to the intervention—as well as location of the child (level of care) at the time of termination were also measured.

Demographic characteristics, percentage of improvement measured on repeated functional measures over time, and summary counts of youth location at the time of disenrollment from the program are reported for the responders. The same analysis was performed for non-responders.

Results

A review of the baseline CAFAS scores grouped by responders and non-responders indicates that responders average lower beginning total scores (83.6) than non-responders (113.4). Low scores equal higher levels of functioning. Responders averaged 26 months in the program, whereas the average enrollment for non-responders was 17 months. The percentage of improvement for responders on the CAFAS from baseline to graduation was 35%; the percentage of improvement for non-graduates was 7% (see Figure 1). A look at location after disenrollment shows that 89% of graduates were living at home, versus 57% of non-graduates. Diagnostic breakouts of the two groups reveal higher percentages of ADHD as the primary diagnosis for the responders than for the non-responders (16% vs. 6%), while the reverse was true for PTSD as a primary diagnosis (31% vs. 53%) for responders versus non-responders.

Figure 1
Average Change in CAFAS Score
by Responders vs. Non-Responders
March 1998 – June 2005
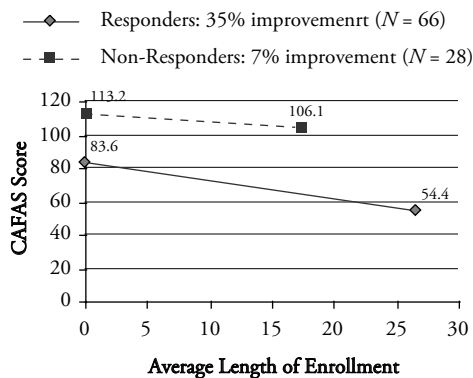
Family risk factor analysis revealed equivalent rates of parental mental illness for both responders, (81%), and non-responders (80%). However, a larger percentage of non-responders reported parental substance abuse (74%) than did responders (69%), and more non-responders than responders (20% vs. 0%) reported having siblings who had been imprisoned (see Table 1).

Age comparisons for each group show that the youngest study participants (three to five year olds) were the least likely to graduate (33%), while teenagers were the most likely to graduate. Responders were more likely to be female than male: 62 % of female participants graduated vs. 56% of males. Race/ethnicity break-outs indicate wide variation: African-American and bi-racial youth responded to the MHSPY intervention at the highest rate, which is 2:1 graduates vs. non-graduates, in contrast to White children and adolescents who graduated 52% of the time. Latino youth were more likely not to graduate (55%) than to graduate (45%; see Table 1).

Referring agencies differed between the groups: youth referred to the program by the schools graduated at the highest rate (65%), followed by those referred by the state's Child Welfare system (60%), then those referred by the state Mental Health system (55%). The Juvenile Justice referrals were least likely to graduate (38%; see Table 1).

Table 1
Demographics

	Responders N = 75	Non-Responders N = 54	N = 129
Gender			
Female	62%	38%	42
Male	56%	44%	87
TOTAL	58%	42%	129
Age			
0-5 year olds	33%	67%	3
6-12 year olds	53%	47%	43
13-15 year olds	64%	36%	42
16-19 year olds	59%	41%	41
TOTAL	58%	42%	129
Race/Ethnicity			
African American/ Bi-Racial/African	66%	34%	32
Asian/ South Asian	100%	0%	3
Caucasian	52%	48%	60
Latino	45%	55%	22
Other	83%	17%	12
TOTAL	58%	42%	129
Referring Agency			
DMH	55%	45%	20
DSS	59%	41%	74
DYS	38%	63%	8
School	63%	37%	27
TOTAL	58%	42%	129
Diagnoses			
PTSD	32%	57%	37
Mood Disorders	24%	11%	19
ADHD	17%	4%	12
Conduct & Oppositional Disorders	12%	14%	12
Psychosis	6%	11%	7
Developmental Disorders	6%	0%	4
Anxiety Disorders	2%	4%	2
Selective Mutism	2%	0%	1
TOTAL	100%	100%	94
Location At Disenrollment			
Home	89%	57%	98
Foster Care	9%	6%	10
AWOL	0%	2%	1
Group Home	0%	6%	3
Incarcerated	0%	2%	1
Residential	1%	28%	16
TOTAL	100%	100%	129

Conclusion

Preliminary investigation suggests that while the overall population of MHSPY enrollees appears to display clinical improvement from baseline to termination, there are differences in the slope of improvement for MHSPY graduates (who may be those youth most likely to respond to home and community based intervention) versus those who do not graduate (all of whom are, to a greater or lesser extent non-responders). The so-called non-responders are actually a somewhat heterogeneous group clustered only by the fact that their Care Planning Teams did not feel that the full mission for the child had been achieved. This group includes a very small number of drop-outs (11%), while the other 89% participated to the best of their capacity, and many actually improved. Another level of investigation into the non-graduates might prove valuable in differentiating "less responsive" youth and families versus non-

responders. In other words, the degree of responsiveness to home-based intervention may represent more of a continuous variable than the binary "responder/non-responder" labels imply.

The fact that those with the greatest gains during treatment have a twenty-point lower baseline CAFAS score than the non-responders may be a finding of potential interest to the field, since statistically those who are the furthest from the mean would be expected to demonstrate the greatest improvement. It is possible that we are running up against true limitations for applicability of home and community based treatment of youth with mental illnesses. While most MHSPY youth are able to remain in the community, despite serious diagnoses and on-going risks, there may be a level of need that cannot be optimally treated at home. This need appears to be expressed in a variety of ways, but early indications are that location of school and community are highly correlated with difficulty graduating from MHSPY. Conversely, responders benefit from a combination of youth, family and community/school factors, which appear powerful enough to offset even some of the usual predictive forces (such as racial disparities) on outcomes.

Future investigation of the non-responders, including additional analyses of duration of intervention, which can be both an engagement as well as a severity indicator, may elicit deeper knowledge of what youth, family and community characteristics contribute to treatment response and the likelihood of program graduation. Ever increasing specificity and shared understanding about those for whom home and community treatment is likely to be successful, and those for whom it is not, is desirable in order to support ongoing improvement of clinical treatment protocols and community resource allocation.

References

Burns, B. J., Farmer, E. M. Z, Angold, A., Costello E.J., & Behar, L.B. (1996). A randomized trial of case management for youths with serious emotional disturbance. *Journal of Clinical Child Psychology.* 25, 476-486.

Demidovich, M., Woolston, J. L. (2004). Promoting children's health: Integrating school, family, and community. *Journal of the American Academy of Child & Adolescent Psychiatry. 43*(9), 1178-1179.

Evans, M. E., Huz, S., McNulty, T., & Banks, S. M. (1996). Child, family and system outcomes of intensive case management in New York State. *Psychiatric Quarterly.* 67, 273-287.

Grimes, K. E. (2004). Systems of Care in North America. In Remschmidt, Belfer & Goodyer (Eds.), *Facilitating pathways: Care, treatment and prevention in child and adolescent mental health* (pp. 35-43). Berlin: Springer.

Grimes, K. E., Mullin, B. (2006). MHSPY: A children's health initiative for maintaining at risk youth in the community. *Journal of Behavioral Health Services and Research. 33*(2), 196-212.

Hodges, K. (1998). Use of the Child and Adolescent Functional Assessment Scale (CAFAS) as an Outcome Measure in Clinical Settings. *Journal of Behavioral Health Services and Research, 25*(3), 325-336.

Sheidow, A. J., Woodford, M. S. (2003). Multisystemic Therapy: An empirically supported, home-based family therapy approach. *The Family Journal, 11*, 257-263.

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Clinical and Non-Clinical Characteristics Associated with Medication Use among Children with Serious Emotional Disturbance

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Thomas Pavkov

Introduction

Currently, more children and adolescents are receiving psychotropic medications than ever before (Gadow, 1997; Jensen, Bhatara, & Vitiello, 1999; Kelleher, Hohmann, & Larson, 1989). Since the 1980s, the amount of psychotropic drugs prescribed to children has increased dramatically (Rawal, Lyons, MacIntyre, & Hunter, 2004). According to Lyons (2000), 80% to 90% of children in hospitals and residential treatment settings are currently on at least one psychotropic medication, and nearly half of these children are on two or more medications. These treatment methods are also becoming an important factor in community programs, such as system of care and wrap around services (Hallfors, 1998; Pumariega, et al., 2000). In order to explore the characteristics associated with medication use among children with serious emotional disturbance, factors such as service utilization, family and child exposures and experience, and insurance status are explored.

The Comprehensive Community Mental Health Services for Children and Their Families Program has funded 121 communities across the United States and its territories to develop community-based, family-driven, culturally appropriate systems of care for children with serious emotional disturbance and develop individualized service plans to meet the unique needs of those children, which may or may not include the use of medication. Data gathered as part of the mandated national evaluation of this federal initiative include, among other things, the collection of information on child and family functioning and experiences, service utilization, and insurance status. These factors were used to investigate the characteristics of children entering systems of care with and without histories of medication use. The availability of these data on a large sample of children with serious mental health challenges provides an excellent opportunity to further investigate the relationship between medication use and non-symptomotologic child and family factors.

Methods

Participants

The current study uses a subset of baseline data collected as part of Descriptive Study of the national evaluation between 1997 and 2004 from up to 45 communities across the United States. Children enrolled in the Descriptive Study with valid data on demographic and family characteristics, Medicaid eligibility, prior service utilization, referral source, and medication history were included in the current study sample (N = 7,009). Children in the current study sample were approximately 12 years of age on average, nearly three-quarters of the study sample was male, and nearly 70% of the children were Medicaid eligible. Over one-half (58%) of the sample were non-Hispanic White, 27% non-Hispanic African-American, 5% Hispanic, and 10% Native American. Nearly one-third (32%) of the children were referred into their respective systems of care from mental health, 22% from the school system, 15% from juvenile justice, 13% by caregiver or self referral, 9% from child welfare, and the remaining 9% from other sources. Nearly 53% of the study sample had reported use of medication for behavioral or emotional symptoms in the six-months prior to system-of-care entry.

Indicators

The majority of data used in the current study were collected via caregiver interview at the child's intake into system-of-care services. Specifically, caregiver report of child and family demographic information; child medication and service history; child Medicaid eligibility; child history of suicide attempt and psychiatric hospitalization; and family mental illness and family income were provided via structured interview. Referral source information was obtained from record review. History of medication use was based on a caregiver question that asked whether their child had taken medication for behavioral or emotional symptoms in the prior six months.

Design and Analysis

First, the bivariate relationship (i.e., *t*-test and chi-square analyses) were explored between medication use in the past six months and child and family demographic and psychosocial characteristics, service history, and Medicaid eligibility. Second, a logistic regression analysis was performed to assess the association between medication use in the six-months prior to system of care entry and child and family characteristics.

Results

While the preliminary first step analyses resulted in some interesting bivariate relationships between medication usage and child and family characteristics, the logistic regression analysis which allowed for the simultaneous entry of all indicators to assess their unique relationship with prior medication usage identified important and significant relationships between non-symptomotologic child and family factors and medication usage for behavioral and emotional symptoms.

Specifically, females with serious emotional disturbance entering systems of care were significantly less likely to have received medication in the six-months prior to their entry (OR = .71, *p* < .001), as were children of African-American (OR = .81, *p* < .01) and Native American (OR = .26, *p* < 001) heritage when compared to children of non-Hispanic White heritage. Children referred to systems of care from the mental health (OR = 2.2, *p* < .001), child welfare (OR = 1.3, *p* < .05) and by self-referral (OR = 1.3, *p* < 05) were all significantly more likely to have medication usage histories when compared to children referred from juvenile justice. Specifically, children referred from mental health were more than 2 times as likely as those referred from juvenile justice to have received medication for emotional or behavioral problems in the six-months prior to system of care entry. There was no difference in the medication usage history between children referred from juvenile justice and the school system (OR = 1.1, *p* = .44).

Children with histories of participating in prior outpatient (OR = 2.8, *p* < .001), day treatment (OR = 1.8, *p* < .001), and school services (OR = 2.2, *p* < .001) were between 2 and 3 times as likely to have received medication in the last six months, while children with histories with alcohol or substance use services (OR = .67, *p* < .001) were less likely to have received such medications. While children who had previously attempted suicide were nearly twice as likely to have received medication in the past six months (OR = 1.8, *p* < .001), those with previous psychiatric hospitalizations were over 4 times as likely (OR = 4.2, *p* < .001).

Children with histories of family illness were more likely to have received medications (OR = 1.5, *p* < 001), as were children from families with higher incomes (OR = 1.1, *p* < .001) and children who were eligible for Medicaid (OR = 1.2, *p* < .05). Older children were slightly (albeit significantly) less likely to have medication histories (OR = .95, *p* < .01). Finally, the education of the caregiver was not associated with the child's prior medication usage (OR = 1.0, *p* = .10).

Discussion

Based on this large sample investigation of children with serious mental health challenges entering system-of-care services, significant and important unique relationships were identified between the usage of medication for behavioral and emotional symptoms over the prior six months and non-sympotomologic child and family characteristics. While it may be argued that some of the characteristics investigated may indeed have third-variable relationships with child presenting problems and symptoms (e.g., prior psychiatric hospitalizations, service history, etc.) there are other characteristics (e.g., Medicaid eligibility, family income, etc.) for which that argument is much more difficult.

Both clinical and non-clinical (family and child) characteristics appear associated with prior medication use, hence clinical characteristics alone are not dictating the prescription and use of medication for the behavioral and emotional problems of children. Given that we know little about the effects of psychotropic medications have upon development, the higher likelihood of medication use among younger children in this sample is cause for concern. The introduction of medications with younger children may additionally pose a greater likelihood of long-term stigmatization and labeling. A detailed examination of the characteristics of younger children using medications versus older children is warranted.

Furthermore, these findings suggest that access to medication may be related to race/ethnic heritage by suggesting that Whites are more likely than African or Native Americans to use medications. Perceptions about using medication to treat mental health issues may differ across ethnic groups and must be further investigated. The role of caregiver education and family income must also be considered in this context.

Finally, service history and referral source appear to play an important role in predicting medication use. History of day treatment, school-based service use and outpatient therapy are all related to medication use, suggesting that medication use may be service sector and duration dependent. Collectively these findings demonstrate interesting, albeit in some instances alarming correlates of medication use among children entering systems of care, and suggest important areas for future research.

References

Gadow, K., (1997). An overview of three decades of research in pediatric psychopharmacoepidemiology. *Journal of Child and Adolescents Psychopharmacology, 7,* 219-236.

Hallfors, D. (1998). An examination of psychotropic drug treatment for children with serious emotional disturbance. *Journal of Emotional & Behavioral Disorders, 6*(1), 56-67.

Jensen, P., Bhatara, V., & Vitiello, B. (1999). Psychoactive medication prescribing practices for U.S. children. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(5), 557-565.

Kelleher, K., Hohmann, A., & Larson, D. (1989). Prescription of psychotropics to children in office-based practice. *American Journal of Diseases of Children, 143,* 855-859.

Lyons, J. (2000). A call for outcomes data: Psychopharmacology with children. *Outcomes & Accountability Alert, 5*(2), 1-13.

Pumariega, A., Del Muno, A., & Vance, B. (2002). Psychopharmacology in the context of systems of care. In B.J. Burns & K. Hoagwood (Eds.), *Community Treatment for Youth* (pp. 277-300). New York: Oxford University Press.

Rawal, P., Lyons, J., MacIntyre, J., & Hunter, J. (2004). Regional variation and clinical indicators of antipsychotic use in residential treatment: A four state comparison. *Journal of Behavioral Health Services & Research, 31*(2), 178-188.

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Who's Minding the Meds: Prescribing Practices for Youth with Serious Emotional Disturbance (SED) by Insurance Type

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Introduction

Even prior to the recent controversy spurred by the Food and Drug Administration warning over the safety and efficacy of antidepressant medication use for children and adolescents, there was growing public and scientific concern over the changing picture of psychiatric medication use in general for youth under eighteen. National studies show the overall rate of psychotropic medication use by children increased from 1.4 per 100 children in 1987 to 3.9 in 1996 (Olfson, Marcus, Weissman & Jensen, 2002), and that the use of antidepressants increased 3-5 fold from 1988-1994 (Zito & Safer, 2001).

Reports of the increasing prevalence of polypharmacy in children are equally disturbing. A national study of data from the 1987 National Medical Expenditure Survey and the 1997 Medical Expenditure panel study found that the rate of co-prescription in the general youth population was almost eight times higher in 1996 than 1987 (Olfson, et al., 2002). In a national study during 1997–1998 of office visits for children in which a stimulant prescription was written, 24.7% of children also received other psychotropic medications (Bhatara, Feil, Hoagwood, Vitiello & Zima, 2002). Such dramatic changes in prescribing practices bring concerns about appropriateness. In particular, previous investigators have noted variation in psychotropic medication prescription by insurance type of the child, as well as by variation based on other demographic factors such as race and ethnicity (Zito, Safer, Zuckerman, Gardner, & Soeken, 2005; dosReis, et al., 2005).

Youth with serious emotional disturbance (SED) are particularly at risk for disparities in medication access and appropriateness (New Freedom Commission on Mental Health, 2003). As prescribing patterns change and access to child psychiatrists becomes more limited, it is of great importance to understand not only whether current treatment practice meets the evidence base, but also how the specialty and training of the clinician affects treatment decisions for the population of children and adolescents with higher need. As a first step, prescribing patterns for Medicaid vs. privately insured children in a non-profit Managed Care Organization (MCO) in New England were examined for variation in the numbers of prescribed medications and medication expense across both groups.
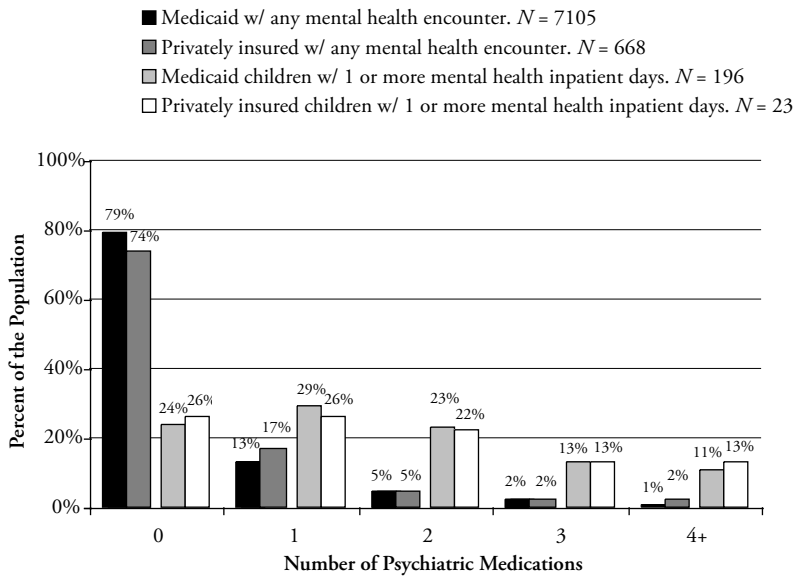
Method

For this study, Medicaid and commercial MCO insurance claims from July, 2004 through June, 2005 were reviewed for all children and adolescents three to nineteen years old with a mental health encounter. In order to capture differences based on morbidity, the resulting sample was divided into two groups: those with any type of mental health encounter and those who had a psychiatric hospital admission. De-identified data for approximately 70,000 Medicaid recipients and 10,000 privately insured children and youth under age 19 included insurance status, claims, prescriptions, service codes and demographic factors such as age and gender. Psychiatric medication use for Medicaid vs. privately insured children with a mental health encounter were compared, as were prescribing patterns for children and adolescents with a psychiatric hospitalization from both insurance groups. Data from both the lower and higher morbidity youth were examined for the presence of zero, one, two, three or four or more simultaneous psychotropic medication prescriptions. Medicaid vs. private insurance status was included in the analysis. A similar comparison was conducted to explore trends in pharmacy expense for each group.

Results

For the population with any type of mental health encounter (representing outpatient only, outpatient and inpatient or inpatient only), children and adolescents insured by Medicaid were slightly more likely (7%) than the privately insured children to be getting no psychotropic medications (see Figure 1).

Figure 1
Distribution of MCO Children by Number of Psychiatric Medications
July 2004–June 2005

■ Medicaid w/ any mental health encounter. *N* = 7105
■ Privately insured w/ any mental health encounter. *N* = 668
□ Medicaid children w/ 1 or more mental health inpatient days. *N* = 196
□ Privately insured children w/ 1 or more mental health inpatient days. *N* = 23
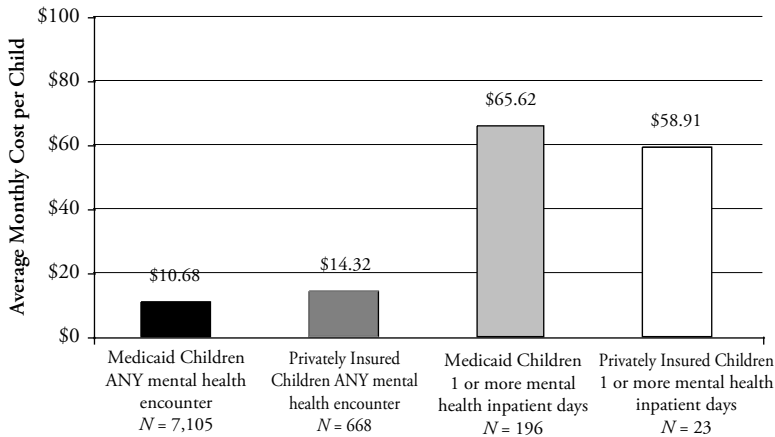

Note: Population is MCO children 3-18 who have at least one mental health encounter, or one inpatient mental health day between 7/1/2004 and 6/30/2005.
N = 7,793

The difference increases when the two groups are examined regarding one psychiatric medication. The privately insured population of youth with a mental health claim is *32% more likely* to receive one medication than the Medicaid insured children. For children on two medications, there is virtually no difference between the two groups. However, for three prescriptions, there is a 25% difference, with, again, more youth with private insurance than those insured by Medicaid getting medications (2.4% vs. 1.9%). Finally, there is a 50% difference between the groups on four or more medications: privately insured children are half again as likely as those on Medicaid to receive four or more medications (1.6% vs. 1.1%). Overall, privately insured children with any kind of mental health encounter (*N* = 668), are more likely to be medicated, than their Medicaid counterparts (*N* = 7105) with $p < .0001$.

Among children who have had at least one psychiatric admission, the differences between children who are privately insured (*N* = 23) or insured via Medicaid (*N* = 196) are in the reverse direction for comparison of 1, 2 or 3 medications (see Figure 1). Privately insured youth who have had inpatient psychiatric treatment are 8.7% less likely to be receiving one medication, 5.3% less likely to receive two medications, and 1.6% less likely to receive three medications. However, privately insured children with histories of hospitalization are *16.2% more likely* to receive four or more psychotropic medications. Overall, privately insured children with at least one psychiatric admission are 8.8% more likely to be on psychiatric medication than are their Medicaid counterparts.

Corresponding expense data for these utilization figures is displayed in Figure 2. The previously described trend toward greater frequency of medication use by children with private insurance is generally consistent with greater expense. Privately insured children with any mental health encounter have an average monthly cost that is 34% higher than that for Medicaid children with comparable claims histories. However, it is of interest that, despite the fact that prescriptions occur more frequently overall for privately insured youth than for Medicaid children with an inpatient psychiatric admission, prescription costs are 10.2% higher per Medicaid child on average than for the privately insured youth.

Figure 2
Cost of Psychiatric Medication for Medicaid and Privately Insured Children
Average Monthly Cost Per Child

Note: Population is MCO children 3-18 who have at least one mental health encounter, or one inpatient mental health day between 7/1/2004 and 6/30/2005.
N = 7,793

Conclusion

All of this raises significant questions about the appropriateness of the care being provided and what is the "right" level of access to medication. It is possible that formulary restrictions are contributing to different patterns for Medicaid versus privately insured youth. It is also possible that barriers to care and/or differences in provider types contribute to the profiles described above, where privately insured children and adolescents appear to have greater access to medications. Given the high stakes for children caught between the medical risks of treatment and the possibility for help for disabling conditions, there is critical need for research into prescribing patterns for psychotropic medications. Variations in the presence or absence of medication use, as well as in patterns of prescription for major classes of psychotropic medications, both of which are associated with demographic and provider specialty differences, represent important areas for further study.

References

Bhatara, V. S., Feil, M., Hoagwood, K., Vitiello, B., & Zima, B. (2002). Trends in combined pharmacotherapy with stimulants for children. *Psychiatric Services*, *53*, 244

dosReis, S., Zito, J. M., Safer, D. J., Gardner, J. F., Puccia, K. B., Owens, P. L. (2005). Multiple psychotropic medication use for youths: a two-state comparison. *Journal of Child and Adolescent Psychopharmacology*, *15*(1), 68-77.

New Freedom Commission on Mental Health. (2003). *Achieving the Promise: Transforming Mental Health Care in America. Final Report*. DHHS Pub. No. SMA-03-3832. Rockville, MD: Author.

Olfson M., Marcus, S. C., Weissman, M. M., & Jensen, P. S. (2002). National trends in the use of psychotropic medications by children. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(5), 514-521.

Zito, J. M., & Safer, D. J. (2001). Services and prevention: Pharmacoepidemiology of antidepressant use. *Biological Psychiatry*. *49*, 1121-1127.

Zito, J. M., Safer, D. J., Zuckerman, I. H., Gardner, J. F., Soeken, K. (2005). Effect of Medicaid eligibility category on racial disparities in the use of psychotropic medications among youths. *Psychiatric Services 2*, 157-63.

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Symptom Onset and Patterns of Service Use among Youth with Conduct Disorder: Findings from the Great Smoky Mountains Study (GSMS) of Youth

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Introduction

Conduct disorder (CD) is characterized by delinquency that exacts a heavy burden on both the individual and the community. Early access to services has been related to improved long-term delinquency outcomes (Feehan, McGee, & Stanton, 1993). Because of the observable nature of CD symptoms, boys and girls with CD are likely to be identified for services, but by whom (i.e., mental health, education, child welfare, and/or juvenile justice)? Further, the services they receive within these sectors are relatively unknown.

The major purpose of this paper is to document knowledge about service use for children with CD up to age 13. Specific goals were to examine: (a) the rate of CD among youth in the community, (b) rates of service use among children qualifying for a CD diagnosis, (c) the overall pattern of service use across sectors, and (d) demographic variations in the findings.

Method

The sample was drawn from the Great Smoky Mountains Study (GSMS), a longitudinal, population-based study in western North Carolina. The methods for the GSMS have been detailed by Costello and colleagues (1996). Briefly, boys and girls aged 9, 11, and 13 were randomly selected from school lists and screened for mental health symptomatology. All of the high-risk and 10% of the low-risk boys and girls were selected for follow-up. An additional American Indian sample was not screened; instead, all American Indian boys and girls in the three age cohorts were selected to maximize sample size. The final sample consisted of 1,398 youths. Interviews were conducted over annual waves and quarterly for service use.

Approximately half (50.7%) of the sample was male. The racial distribution of the sample was as follows: 69.3% White; 24.5% American Indian; and 6.2% African American. Approximately 20% of boys and girls in the sample were living in poverty at the time of the study. The current paper uses data collected over the first four annual waves of the study.

Measures

The Child and Adolescent Psychiatric Assessment (CAPA; Angold, Prendergast, Cox, Harrington, Simonoff, & Rutter, 1995) was used to measure symptomatology. Diagnostic criteria for the CAPA are based on the DSM-IV (American Psychiatric Association, 1994). Respondents reported symptoms across two time frames: ever, and in the last three months. For the current study, symptoms were counted as present if reported by either the parent or the child, or both.

Service use data were collected using the Child and Adolescent Services Assessment (CASA; Ascher, Farmer, Burns & Angold, 1996). The CASA is a structured interview administered to both child and parent that elicits information on use of more than 30 types of services for emotional and behavioral problems. Respondents indicated whether they had ever used services and, if so, whether service use occurred during the past three months immediately prior to the interview. Respondents were also asked for the date of first service use. Services were categorized into four sectors: specialty mental health, child welfare, juvenile justice, and education.

Results

Approximately 10% of the sample qualified for a CD diagnosis at some point over the four annual interviews. The most common comorbid diagnosis in the CD sample was oppositional defiant disorder (38.9%), followed by substance use (38.6%), attention deficit-hyperactivity disorder (15.1%), depression (14.8%), and anxiety (14%).

Males constituted a larger portion of the CD sample (80.3%) than the non-CD sample (51%), consistent with findings from previous research (Romano, Tremblay, Vitaro, Zoccolillo, & Pagani, 2001). Children in the CD group were also more likely to be poor (43% versus 18% of those without CD). The racial distribution was essentially comparable across the two groups (CD and non-CD). There were no demographic differences in comorbidity.

Age at onset of service use has not previously been reported for children in the community with a CD diagnosis. Figure 1 presents symptom onset and service onset for the sample. A lag between the onset of symptoms and the onset of service use is apparent.

Figure 1
Symptom Onset & Service Use for GSMS Children with CD
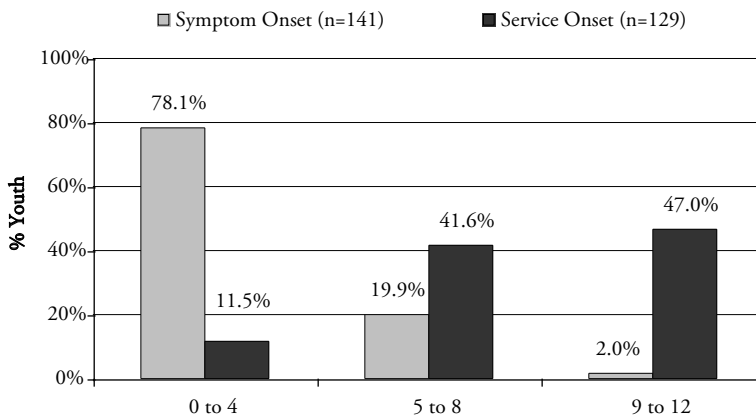
Early onset of CD symptoms was reported, consistent with prior epidemiological data and studies of clinic-referred boys. The majority displayed their first CD symptom by age four (78.1%), but only 11.5% of this very young group received services for emotional/behavioral problems. Both trends then reversed between the ages of five and eight, when 41.6% of the boys and girls began to use services while the onset of symptoms occurred in 19.9%. By the time the sample reached 9-12 years of age, the remaining 2% experienced symptom onset, and there was a continued substantial increase in first service use. Thus, although only a small fraction of the boys and girls experienced onset of CD symptoms between ages 9-12, half of them demonstrated initial service use in this age period.

More than 91% of youth with a CD diagnosis had contact with a service provider from one of the four sectors prior to age 13. Of these youth, 61% reported a service contact in more than one sector. Contacts across sectors were as follows: education (81.3%), specialty mental health (61.8%), child welfare (30.6%), and juvenile justice (10.4%). Males and females in the CD sample were almost equally represented (91.4% and 92.4%, respectively) in their service contacts from any sector. However, child welfare was contacted by a higher percentage of females (41.9% vs. 27.9%).

Conclusion

Early onset of CD symptoms has been found in other studies (Loeber & Farrington, 1998; Tremblay et al., 1998) and underscores the need for early access to services. The high rates of comorbidity displayed by the sample are also consistent with prior findings (Angold, Costello, & Erkanli, 1999), emphasizing the need for attention to compound symptomatology in children with CD.

Rates of service use were relatively high in the sample. This is likely due to the high rates of service use in the education sector, as well as our definition of service use as any contact between the child and a service provider. Despite this finding, there was evidence of a delay between symptom onset and access to services, again underscoring the need for earlier screening and service provision. Most children in the CD sample accessed services from multiple sectors. This supports findings on the multiple problems often faced by these children and the heavy burden they can incur on the system. A key implication of this finding is the need for communication and coordination among service sectors.

Education was the most commonly accessed service sector. Future work should address the dissemination of evidence-based practice into the schools, as they may be a key source of services for children with CD. Rates of contact with juvenile justice were lower than expected. This is surprising given prior findings (Silverthorn, Frick, & Reynolds, 2001) that youth with CD are heavily represented in this sector. The lack of contact in the current sample may be related to the young age range of the sample. Finally, the finding that girls were more likely than boys to use child welfare services may be related to higher levels of abuse in girls (see Walker, Carey, Mohr, Stein, & Seedat, 2004, for review).

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*, Fourth Edition. Washington, DC: Author.

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, 40*, 57-87.

Angold, A., Prendergast, M., Cox, A., Harrington, R., Simonoff, E., & Rutter, M. (1995). The Child and Adolescent Psychiatric Assessment (CAPA). *Psychological Medicine, 25*, 739-753.

Ascher, B. H., Farmer, E. M. Z., Burns, B. J., & Angold, A. (1996). The Child and Adolescent Services Assessment (CASA): Description and psychometrics. *Journal of Emotional and Behavioral disorders, 4*, 12-20.

Costello, E. J., Angold, A., Burns, B. J., Stangl, D. K, Tweed, D. L., Erkanli, A., & Worthman, C. M. (1996). The Great Smoky Mountains Study of Youth. Goals, design, methods, and the prevalence of DSM-III-R disorders. *Archives of General Psychiatry, 53*, 1129-1136.

Feehan, M. McGee, R., & Stanton, W. R. (1993). Helping agency contact for emotional problems in childhood and early adolescence and the risk of later disorder. *Australian and New Zealand Journal of Psychiatry, 27*, 270-274.

Loeber, R., & Farrington, D. P. (Eds.). (1998). *Serious and violent juvenile offenders: Risk factors and successful interventions*. Thousand Oaks: Sage.

Romano, E., Tremblay, R. E., Vitaro, F., Zoccolillo, M., & Pagani, L. (2001). Prevalence of psychiatric diagnoses and the role of perceived impairment: Findings from an adolescent community sample. *Journal of Child Psychology and Psychiatry, 42*, 451-461.

Silverthorn, P., Frick, P. J., & Reynolds, R. (2001). Timing of onset and correlates of severe conduct problems in adjudicated girls and boys. *Journal of Psychopathology and Behavioral Assessment, 23*, 171-181.

Tremblay, R. E., Schaal, B., Boulerice, B., Arseneault, L., Soussignan, R. G., Paquette, D., & Laurent, D. (1998). Testosterone, physical aggression, dominance, and physical development in early adolescence. *International Journal of Behavioral Development, 22*, 753-777.

Walker, J., Carey, P. D., Mohr, N., Stein, D. J., & Seedat, S. (2004). Gender differences in the prevalence of childhood sexual abuse and in the development of pediatric PTSD. *Archives of Women's Mental Health, 7*, 111-121.

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Modeling Aftercare Decision-Making for Hospitalized Adolescents

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Introduction

Discharge planning and linkage to appropriate aftercare services are crucial to successful outcomes following inpatient care. As length of hospital stays have markedly decreased, treatment teams are forced to quickly assess children's needs and almost immediately at admission decide what types of aftercare services and community supports are necessary to ensure continued stabilization after hospitalization. These decisions are difficult and time-consuming, yet there are virtually no assessment tools or level-of-care criteria to guide decisions about aftercare placements (Burns, Hoagwood, & Maultsby, 1998). Ideally, decisions should be based on clinical need and youths should be placed in the least restrictive environment. However, anecdotal evidence suggests that decisions are often driven by non-clinical factors such as availability of services, financial arrangements and organizational level variables. Surprisingly, few studies have examined factors that influence decisions about aftercare placement (Daniel, Goldston, Harris, Kelly, & Palmes, 2004; Foster, Saunders, & Summerfelt, 1996; Goldston et al., 2003). Using a reliable, well-established decision-support tool and merged data from medical records and the Area Resource File (Bureaus of Health Professions, 1998), this study explores the relative influence of non-clinical factors on aftercare decision-making.

Method

Data for this study were collected as part of a larger retrospective investigation on factors associated with psychiatric re-hospitalization of adolescents (Fontanella, 2003). The sample consisted of 522 adolescents consecutively admitted to three major private psychiatric hospitals in Maryland between July 1, 1997 and June 30, 1998. Eligibility for inclusion in the sample was based on three criteria: (a) aged 11-17.99; (b) covered by or eligible for Medicaid; and (c) resident of Maryland. Adolescents were excluded if they were discharged against medical advice, eloped from the hospital, or were missing records (*n* = 23). Complete details about the methods of the Baltimore Inpatient Study and data collection procedures are described elsewhere (Fontanella, 2003).

Sample

The sample for the current study included 508 adolescents. The mean age was 14.3 years; 54% were female; 45% were Caucasian; 51% were African American and 4% comprised other racial/ethnic groups. More than one-third (38%) were in state custody at the time of the index admission.

Data Sources and Procedures

The study merged data from hospital records (demographics, clinical variables, and recommended aftercare) and from the Area Resource File, a national dataset that included information on availability of mental health providers. Medical record data were abstracted by two graduate social work students who were blind to study hypotheses. Inter-rater reliability ranged from .85 to .96 using the intraclass correlation coefficient.

Measures

Aftercare Services. The dependent variable was type of recommended aftercare services coded into 0, *outpatient only*; 1, *intermediate non-residential* (day treatment); 2, *intermediate residential* (therapeutic foster-care, group home, crisis residential); and 3, *residential treatment* (residential treatment center). The measure includes the full range of service types, from least to most restrictive treatment setting.

Clinical Need. Items from symptom, risk behavior, and functioning dimensions of the Childhood Severity Psychiatric Illness (CSPI) scale (Lyons, 1998) were used to measure mental health need. The CSPI is a standardized decision-support tool with good reliability and validity that measures 25 clinically relevant items on a 4-point scale ranging from 0, *no evidence of disturbance* to 3, *severe disturbance* (Lyons, Kisiel, Dulcan, Chesler & Cohen, 1997).

Availability of Providers. An index of community providers was created that consisted of the number of providers (child psychiatrists, pediatricians, psychologists, and social workers) per 1,000 adolescents in each county.

Service Use. Service history was measured by hospital provider, length of stay, prior hospitalizations, multiple out-of-home placements, and mental health services received 30 days prior to the index admission (see Table 1 for service categories).

Sociodemographic Characteristics. Variables included adolescent's age at admission, gender, race/ethnicity, and custody status (see Table 1 for reference categories).

Table 1
Multinomial Logistic Regression Predicting Level of Aftercare (*N* = 508)

Variable	Outpatient vs. Intermediate Non-Residential		Outpatient vs. Intermediate Residential		Outpatient vs. Residential Treatment Center	
	ßeta	*Odds Ratio*	*ßeta*	*Odds Ratio*	*ßeta*	*Odds Ratio*
Demographics						
Age at admission (Yrs)	.04	1.03	.15	1.17	.10	1.11
Race (African American)	-.41	.66	1.22	3.41**	.67	1.94
State Custody (Yes)	.18	1.20	2.93	18.77**	1.34	3.81*
Clinical Need						
Neuropsychiatric Disturbance	.32	1.38*	.55	1.74**	.46	1.59*
Emotional Disturbance	.59	1.80*	.82	2.28*	.34	1.41
Behavioral Disturbance [a]	.06	1.06	.08	1.08	.49	1.64**
Danger to others	-.14	.87	.09	1.09	-.48	.62
Elopement risk	-.23	.79	-.28	.75	-.08	.92
Family impairment	.18	1.19	.84	2.32**	.30	1.35
Availability of Providers						
Community mental health provider index	.03	1.03	-.04	.96*	-.02	.98
Service Use						
Hospital provider (Ref: Hospital A)						
Hospital B	-2.17	.11**	-.33	.72	-.53	.59
Hospital C	-1.16	.31*	-1.33	.26*	-2.30	.10**
Length of stay (Logged)	.69	2.01**	.71	2.03*	1.95	7.04**
Prior services (Ref: No Services)						
Non-residential [b]	.48	1.61	.89	2.44	.24	1.27
Residential [c]	.68	1.96	3.03	20.61**	2.39	11.02**
Prior hospitalizations (Yes)	.75	2.12*	.56	1.76	1.21	3.36**
Multiple out-of-home placements (Yes)	.64	1.90	1.45	4.25**	1.74	5.71**
Constant	-4.76		-10.29		-11.59	

Note: Overall Model Chi-square = 643.41; *df* (51). Base referent category for the dependent variable is Outpatient Care
[a]The high correlation between the three symptom variables of the CSPI (conduct, oppositional, and impulsivity) necessitated that the variables be collapsed into one variable that measured severity of behavioral problems. Scores for this variable ranged from 0, no behavioral problems to 9, severe behavioral problems.
[b]Includes outpatient and day treatment. [c]Includes foster-care, group homes, residential treatment center
*p < .05, **p < .01

Analyses

Multinomial logistic regression was used to examine predictors of the four levels of aftercare—outpatient, intermediate non-residential, intermediate residential, and residential treatment. Outpatient care was the reference category. Variables were entered into the equation in four steps. Model 1 included demographic variables; Model 2 added clinical variables; Model 3 added community resources; and Model 4 added service history variables. The final model included all variables that were significant at the $p < .20$ level in bivariate analyses.

Results

Of the 508 adolescents in the study, close to one-third ($n = 155$) were recommended for outpatient care at discharge from hospital. Slightly more than a fifth were recommended for intermediate non-residential care, 26% ($n = 130$) for intermediate residential care, and 23% ($n = 119$) for residential treatment. Eighty-five percent ($n = 430$) actually received the services that were recommended. The remaining 15% ($n = 78$) did not participate in recommended services either because of (a) lack of availability ($n = 64$); (b) parental refusal ($n = 8$); or (c) funding constraints ($n = 6$).

Predictors of Aftercare Services

Table 1 shows the predictors of aftercare for each of the recommended discharge plans in relation to outpatient care**.**

Intermediate Non-Residential. Youths were more likely to be recommended for intermediate non-residential care instead of outpatient care if they had higher neuropsychiatric and emotional disturbances ($OR = 1.38$, $p < .05$; $OR = 1.80$, $p < .05$ respectively), longer length of stays ($OR = 2.01$, $p < .01$), and prior hospitalizations ($OR = 2.12$, $p < .05$). Adolescents were less likely to be referred to intermediate non-residential care if they were admitted to both Hospital B ($OR = .11$, $p < .01$) and Hospital C ($OR = .31$, $p < .01$).

Intermediate Residential. Prior residential services ($OR = 20.61$, $p < .0005$), multiple out-of home placements ($OR = 4.25$, $p < .01$), longer lengths of stay ($OR = 2.03$, $p < .05$), and greater neuropsychiatric and emotional disturbances ($OR = 1.74$, $p < .01$; $OR = 2.27$, $p < .05$) as well as family dysfunction ($OR = 2.32$, $p < .01$) increased the likelihood of being recommended for intermediate residential care versus outpatient care. African American youths were three times ($OR = 3.41$, $p < .01$) more likely to be referred for intermediate residential care compared to outpatient care and youths in state custody were over eighteen times more likely to be referred to intermediate residential care. Youths who lived in areas with greater numbers of providers ($OR = .96$, $p < .05$) or were admitted to Hospital C ($OR = .26$, $p < .05$) were less likely to be referred to intermediate residential care.

Residential Treatment. Youths were more likely to be referred to a residential treatment facility versus outpatient care if they received some type of residential treatment prior to hospitalization ($OR = 11.01$, $p < .01$), had longer lengths of stay ($OR = 7.04$, $p < .01$), multiple-out-home placements ($OR = 5.71$, $p <.01$), prior hospitalizations (OR = 3.36, $p < .01$), and more neuropsychiatric and behavioral problems ($OR = 1.59$, $p < .05$; $OR = 1.63$, $p < .01$). Adolescents who were in state custody were more than three times ($OR = 3.81$, $p < .05$) more likely to be referred to a residential treatment center compared to outpatient care. Admission to Hospital C decreased the likelihood of being referred to a residential treatment center by 90% ($OR = .10$, $p < .01$).

Discussion

Findings for this study indicate that non-clinical factors influence decision-making even after controlling for level of clinical need. The clinical factors associated with more restrictive care included more severe symptomatology and longer lengths of stay. Prior service use was also a strong predictor of aftercare decisions. Non-clinical factors had a substantial effect on aftercare decisions. The finding that

youths who were in state custody were more likely to be referred to residential care instead of outpatient care suggests that wards of the state may be subject to different decision-making standards. Moreover, the findings that youths who were African American also were more likely to be referred to residential care raises questions about whether minority youth have access to appropriate, less restrictive treatment alternatives. Also important were findings about the role of community level variables and organizational factors in influencing aftercare decision-making. Youths residing in areas with greater numbers of mental health providers were less likely to be placed in higher levels of care, confirming the commonly held belief that decisions are driven in part by availability of services. Placement decisions also appear to be influenced by provider behavior. Even after controlling for demographic and clinical variables, hospital provider strongly influenced aftercare decision-making. Overall, the study underscores the need for standardized decision-support tools and access to a continuum of mental health services to ensure improved quality of care.

References

Bureaus of Health Professions, Office of Research and Planning. (1998). *Area Resource File.* Fairfax, VA: Quality Resource Systems, Inc.

Burns, B. J., Hoagwood, K., & Maultsby, L. T. (1998). Improving outcomes for children and adolescents with serious emotional and behavioral disorders: Current and future directions. In M. H. Epstein, K. Kutash & A. Duchnowski (Eds.), *Outcomes for children & youth with behavioral and emotional disorders and their families: Programs & evaluation best practices* (pp. 685-707). Austin, TX: Pro-Ed.

Daniel, S. S., Goldston, D. B., Harris, A. E., Kelly, A. E., Palmes, G. K. (2004). Review of literature on aftercare services among children and adolescents. *Psychiatric Services*, *55*(8), 901-912.

Fontanella, C. (2003). *Psychiatric readmission of adolescents in the public mental health system*. Doctoral Dissertation. Baltimore, MD: University of Maryland, School of Social Work.

Foster, M. E., 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*(2), 143-153.

Goldston, D. B., Reboussin, B. A., Kancler, C., Daniel, S. S., Frazier, P. H., Harris, A. E. (2003). Rates and predictors of aftercare services among formerly hospitalized adolescents: A prospective naturalistic study. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(1), 49-56.

Lyons, J. S. (1998). *The severity and acuity of psychiatric illness scales: An outcomes-management and decision-support system: Child and adolescent version*. San Antonio, TX: Psychological Corporation.

Lyons, J. S., Kisiel, C. L., Dulcan, M., Cohen, R., & Chesler, P. (1997). Crisis assessment and psychiatric hospitalizations of children and adolescents in state custody. *Journal of Child and Family Studies, 6*, 311-320.

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The Relationship of Social Supports toward Adolescent Girls' Resiliency in Families Receiving Welfare

Lela Taylor
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Introduction

The purpose of this research was to investigate how to help adolescent girls living in poverty succeed in today's society. Specifically, the study examined the changes over time in social supports, rates of depression levels, pregnancy, and high school drop out rates in a cohort of adolescent girls whose mothers were receiving Temporary Assistance for Needy Families (TANF).

Over the past ten years, poverty has decreased by 6% (Kids Count, 2000). Nevertheless, there are still 12.4 million children living in poverty (Annie E. Casey Foundation, 2000). Moreover, one in every three children living in poverty resides in single-parent families headed by women (Annie E. Casey Foundation, 2000).

Research has documented the numerous harmful effects that poverty has on adolescent girl's well-being. Children residing in impoverished families were more likely to endure isolation from others, unhealthy living conditions, and lower educational opportunities (DiLeonardi, 1993). Significant relationships are also reported between socioeconomic status and physical and health and school involvement (Child Trends, 2002). Children living in poverty are significantly more likely to be in poorer health and to experience more emotional and behavioral problems than their non-impoverished peers. Similarly, girls living in poverty are more likely to experience depression (Puotiniemi, & Kyngas, 2004). Adolescent girls living in poverty are more likely to be sexually active (Boothroyd, et al., 2005) and to become pregnant compared to girls living in more affluent situations. Dropping out of school is more likely in to occur in moderate and high poverty neighborhoods (Child Trends, 2002; Harding, 2003) than in affluent ones.

Social supports have been shown to be a helpful mediator in dealing with these adverse outcomes associated with poverty. There are various types of social supports, but the two distinct supports are emotional and instrumental. Both have been found to affect an adolescent's well-being. However, research has also shown that source of support contributes to different effects for the recipient (Colarassi & Eccles 2003). For example, a cross-sectional study comparing middle school and high school groups showed that both groups' primary source for emotional support came from their parents (Richman, Rosenfeld, & Bowen, 1998). Another study showing the effects of instrumental support for low-income women documented that more "professional" support predicted higher levels of depression (Bassuk, Perloff, Mickelson, & Bissell, 2002).

Method

Research Questions

The three research questions addressed in this summary were:

1. What are the levels of social supports, teenage pregnancy, high school drop out, and depression that this cohort of adolescent girls living in poverty experience?
2. Do the levels of social supports, teen pregnancy, high school drop out, and depression change over time?
3. To what extent are social supports correlated with teenage pregnancy, high school drop out, and depression?

Participants

The participants were 125 mothers who were receiving TANF at the start of the study and their adolescent daughters ranging from the ages 13 to 17 residing in a five-county region in Florida. From this

population, 20 adolescents were randomly selected to participate in a comprehensive qualitative interview. This summary focuses on the daughters' status on measures of interest, and responses on interviews.

Study Design

The study used a mixed-method design, including both qualitative and quantitative approaches. The quantitative portion of the study involved data collection through face-to-face interviews with both the mothers and the daughters (*n* = 125) using a standardized interview protocol. The qualitative aspect of the study included comprehensive open-ended interviews with the random sample of 20 daughters. The protocols were created to focus on the girl participants, and each year, modifications were made to the protocols based on the following year's results as well as to ensure that the measures were age appropriate. In this longitudinal study, the attrition level was very low. In 2003, 93% of the daughters were re-interviewed. Follow-up interview rates were 89% in 2004 and 92% in 2005. Although many domains were examined in the original study, only data pertaining to social supports, depression, high school dropout, and pregnancy are examined here.

Measures

Social Support. Two measures were used in this study to assess adolescents' level of social supports. The Social Support Scale for Children (Harter, 1985) was used in the first three years of the study. This 24-item self-report measure assesses the adolescents' perceptions on the extent of positive and negative social support from four sources: parents, classmates, teachers and close friends. In 2005, the social support measure was replaced with the Inventory of Socially Supportive Behaviors (ISSB; Barrerra, Sandler, & Ramsey, 1981). The ISSB is a 40-item self-report measure that uses a five-point Likert-type scale and has been shown to have acceptable reliability and validity (Barrera & Ainlay, 1983).

Depression. The Center of Epidemiologic Studies Depression (CES-D; Radloff, 1977), a 20-item self-report measure, was used to assess the daughters' level of depression. For each question, the daughters were asked to report the frequency of depressive symptoms they experienced during the past week. Studies have documented the CES-D to be a valid and reliable measure (Hann, Winter, & Jacobsen, 1999; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977) and useful for the initial screening of depression (Roberts & Vernon, 1983).

Other Outcomes. Both the teenage pregnancy and high school drop out measures consisted of a single self-report item. The questions were dichotomized as either *yes* or *no*, to: (a) having been previously pregnant and (b) having dropped out of school.

Analysis

Initial analyses involved the use of descriptive statistics to assess the daughters' levels of social support, depression, pregnancy, and high school drop out rates in each of the four study years. In addition, repeated measures analyses of variance were conducted in order to assess any changes in these measures over the four-year study. Correlational analyses were then conducted to examine the relationship between social support and depression, high school drop out and teenage pregnancy.

Results

Characteristics of the Adolescents

Table 1 provides a summary of the characteristics of daughters interviewed at the start of the study in 2002. Daughters' ages ranged from 13 to 17, averaging 15.5 years old (*SD* = .99). In terms of the daughters' racial/ethnic distribution 33.6% were White; 40.8% Black/African American; and 25.6% Hispanic. At the start of the study, 28.0% of the daughters reported they had dropped out of school. All of the daughters were living at home with their mothers, and none of them were married.

Changes in Adolescents' Depression, Pregnancy Rates, High School Dropout, and Social Supports

Table 2 provides a summary of the changes in rates of depression, pregnancy, school dropout, and social supports among the 125 adolescent girls over the four-year study. Although not statistically significant, the percentage of daughters reporting depressive symptoms exceeding the criterion score on the CES-D increased over time from 30.6% in 2002, to 45% in 2005. Somewhat less surprising, given the age of these girls, is the percentage of daughters who reported having been pregnant at some point in time; a significant change over time was observed starting at 15% in 2002 and increasing to nearly 45% in 2005 $F(1,124) = 51.30$; $p < .001$. The percentage of daughters dropping out of school also significantly increased between 2002 and 2005 $F(1,124) = 11.13$; $p < .001$ from 28% in 2002 to 43% in 2005. In terms of the daughters' social supports, examination of changes during the first three years of the study when the Social Support Scale for Children was used revealed no significant change. The mean scores for these adolescent girls generally consistent with the average scores reported by Harter (1985), with the exception of the teacher support subscores which tended to be somewhat higher in the sample of girls.

Table 1
Characteristics of the Daughters

Characteristics	Daughters 2002 (n =125)
Age	
Mean	15.5
SD	.99
Range	13 - 17
Race/Ethnicity	
White	33.6%
Black/African American	40.8%
Hispanic	25.6%
Marital status	
Married or living as married	0%
Divorced, Separated, or Widowed	0%
Never married	100%
Education	
Dropped out of school	28.0%
Completed high school/GED	NA

Table 2
Changes in Depression, Pregnancy Rates, High School Dropout, and Social Supports

Measure	2002	2003	2004	2005	p <
Depression	30.6%	40.9%	45.0%	38.3%	NS
Pregnancy Rates	15.2%	21.6%	36.8%	44.8%	.001
HS Dropout Rates	28.0%	24.0%	34.3%	43.2%	.001
Social Supports					
Classmates	3.03(.84)	3.23(.63)	3.23(.63)	NA[1]	NS
Teachers	3.26(.76)	3.27(.60)	3.25(.66)	NA[1]	NS
Parents	3.32(.85)	3.45(.63)	3.43(.70)	NA[1]	NS
Friends	3.35(.83)	3.49(.69)	3.39(.72)	NA[1]	NS
Total	77.46(17.26)	80.96(12.25)	80.48(11.70)	NA[1]	NS

[1]The Children's Social Support Scale was not used in 2005.

Relationship of Social Supports to Depression, Pregnancy Rates, and High School Dropout

All 12 resulting correlations were negative, indicating that higher levels of social supports in one year were associated with lower levels of depression in the following year. The two types of social support that were most highly correlated with adolescents' depression scores were social supports provided by parents and classmates. All of the six correlations between parents and classmates and depression were significant; four at the .01 level and two at the .05 level. Although less highly correlated compared to parents and classmates, teacher social supports were significant related to CES-D scores in two of the three years. Social supports from friends were not significantly related to depression. The magnitude of all the correlations ranged between -.031 and -.334, indicating that upwards to 11% of the variability in adolescents' depression scores was accounted for by these forms of social supports.

Additional correlations were computed in order to assess the levels of teenage pregnancy and high school drop out rates for the adolescents in this study. The analysis of these two groups indicated mixed correlations. In general, higher levels of social support were associated with less teenage pregnancy and high school drop out. In all three years of the teenage pregnancy analyses, social supports from close friends were associated with a decreased likelihood of becoming pregnant. In 2003, classmates' and teachers' social supports were also associated with lower levels of pregnancy than in other years.

When the lagged correlations were assessed for social support and high school drop out, 11 of the 12 of the correlations were negative, indicating that adolescents who were not in school had lower levels of social supports from any source compared to adolescents who were still in school or had graduated. The only source of social support that was negatively associated with being in school was support from classmates in the last year of the analysis. In general, being pregnant and not in school were associated with having fewer social supports from classmates, close friends, teachers, and family members.

Qualitative Interviews

Follow up qualitative interviews were conducted with four daughters who participated in this study to specifically obtain their perspectives on these new analyses. The interview questions asked and the adolescents about their present status with regard to their education, pregnancy, well-being and social supports. The results indicated that three out of the four daughters graduated from high school. Even though all four daughters desired to further their education, only one daughter had pursued a post-secondary education. Only one of the daughters had been pregnant. All four reported depressive symptoms during adolescence; nevertheless, all reported that social support from parental figures (mothers and grandmothers, in particular) helped them to overcome challenging situations.

Discussion/Implications

The mean social support scores for these adolescent girls are generally consistent with the average score reported by Harter (1985), with the exception of the teacher support subscores which tended to be somewhat higher in the sample of girls. This is a positive finding, in that despite living in poverty, these daughters report having better than average social support systems. Although the increased pregnancy rate is somewhat expected given that the daughters were becoming older, in 2005, 45% of this cohort of 125 daughters who reported they had been pregnant seems high, given that the Center for Disease Control (CDC) noted in their 2003 National Youth Risk Behavior Survey (CDC; Grunbaum, et al., 2003), that 51% of students are sexually active by grade 12. It must be noted, however, that a number of the daughters had already graduated from high school by 2005. The dramatic increase in the number of daughters reporting depressive symptoms is a cause for concern, particularly in light of the fact that during any given year, no more than 5% of adolescents perceived a need for mental health services. The high school dropout rates mean a growing number of these girls are entering the workforce in primarily low paying positions with few if any benefits.

These analyses suggest most of the daughters in this study face an increasing number of barriers that can prevent them from moving out of poverty and becoming economically self-sufficient. We question

how these daughters will respond to the accumulating number of challenges and their changing roles in light of the fact that few structural supports are available to assist them. What impact will these challenges and changes have on their ability to be productive and happy adults, attain their personal goals, and become economically self-sufficient? What role and responsibility do/should we have to provide supports to maximize the potential for adolescents' success? This emerging body of research documenting the poor outcomes of adolescents growing up in poverty raises cause for concern. At the very least we need to focus energy on developing strategies to assist these adolescent girls while their hopes and aspirations remain high—and before they come to face accumulating life challenges that may drown their spirits and impede their ability to succeed as adults.

References

Annie E. Casey Foundation. (2002). *Children at risk: State trends 1990-2000*. Baltimore, MD: Author.

Barrera, M., Jr., & Ainlay, S. L. (1983). The structure of social support: A conceptual and empirical analysis. *Journal of Community Psychology*, *11*, 133-143.

Barrera, M., Jr., Sandler, I. N., & Ramsay, T. B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology*, *9*, 435-447.

Bassuk, E. L., Perloff, J. N., Mickelson K. D & Bissell, H. D. (2002). Role of kin and nonkin support in the mental health of low-income women. *American Journal of Orthopsychiatry, 72*, 1, 39-49.

Boothroyd, R. A., Armstrong, M. I., Gómez, A., Ort, R., Chen, R., Best, K. A., & Haynes, D. (2005, June). *Welfare reform: Adolescent girls in transition – A three year follow-up study*. Technical report. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, Department of Mental Health Law and Policy.

Child Trends. (2002, April). *The unfinished business of welfare reform: Improving prospects for poor children and youth*. 1-20: Author. Retrieved December 29, 2006 online at: http://www.childtrends.org/files/ unfinishedbusinessofwr.pdf

Colarossi, L. G., & Eccles J. S. (2003). Differential effects of support providers on adolescents' mental health. *Social Work Research, 27*(1), 19-30.

DiLeonardi, J. W. (1993). Families in poverty and chronic neglect of children. Families in society. *The Journal of Contemporary Human Services, 72*(9), 557-562.

Grunbaum, J. A., Kann, L., Kinchen, S. A., Williams, B., Ross, J. G., Lowry, R., & Kolby, L. (2003). *Youth risk behavior surveillance —United States, 2001*. WMMR Surveillance Studies, Center for Disease Control. 1(64). Retrieved July 29, 2003,on line at: http://www.cdc.gov/mmwr/preview/mmwrhtml/ ss5104a1.htm

Hann, D., Winter, K., & Jacobsen, P. (1999). Measurement of depressive symptoms in cancer patients: evaluation of the Center for Epidemiological Studies Depression Scale (CES-D). *Journal of Psychiatry, 46*, 437-443.

Harding, D. J. (2003). Counterfactual models of neighborhood effects: The effect of neighborhood poverty on dropping out and teenage pregnancy. *American Journal of Sociology*, *109*, 676–719.

Harter, S. (1985). *Manual for the Social Support Scale for Children*. Denver, CO: University of Denver.

Kids Count (2000). *2000 KIDS COUNT data book: State profiles of child well-being*. Baltimore: The Annie E. Casey Foundation.

Puotiniemi, T. A., & Kyngas H. A. (2004). The coping of an adolescent who has been in psychiatric inpatient care and her mother in everyday life. *Journal of Psychiatric and Mental Health Nursing, 11*(6), 675-682.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385-401.

Richman, J. M., Rosenfeld, L. B., & Bowen, G. L. (1998). Social support for adolescents at risk of school failure. *Social Work, 43*(4), 309-323.

Roberts, R. E., & Vernon, S. W. (1983). The Center for Epidemiologic Studies Depression Scale: Its use in a community sample. *American Journal of Psychiatry, 140*, 41-46.

Weissman, M. M., Sholomskas, D., Pottenger, M., Prusoff, B. A., & Locke, B. Z. (1977). Assessing depressive symptoms in five psychiatric populations: A validation study. *American Journal of Epidemiology, 106*, 203-214.

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