

**FACILITATING SERVICE ACCESS FOR CHILDREN AND FAMILIES IN CHILD WELFARE:
AN ECOLOGICAL PERSPECTIVE**

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ABSTRACT

Emmeline Chuang: Facilitating Service Access for Children and Families in Child Welfare:
An Ecological Perspective
(Under the direction of Rebecca Wells, PhD, MHSA)

Background. Families involved with the child welfare system often have severe and costly unmet health and social service needs. Contextual and organizational factors that could explain variation in service delivery are under-examined in the child welfare literature.

Conceptual Framework. The ecological perspective posits that child welfare agency behavior is influenced by both intra-organizational factors and the interaction of the child welfare agency with its external environment. In this dissertation project, the ecological perspective is applied to identify factors at three levels of the child welfare agency environment – micro, meso, and macro – that influence the services received by children and their families.

Research Objective. This project consists of three studies: The first examines the extent to which a micro-level factor, caseworkers' work climate, moderates the effect of a macro-level factor, performance-based contracting, upon services for caregivers. The second study examines how a factor at the meso-level, inter-agency collaboration between local child welfare and juvenile justice agencies, influences youth behavioral health service receipt. Finally, the third study examines how the accessibility of Medicaid, another macro-level factor, and the supplementation of Medicaid with child welfare funds affects children's mental health services.

Methods. Data were drawn from the National Survey of Child and Adolescent Well-Being (NSCAW) and the Caring for Children in Child Welfare (CCCW) project. Multivariate regression analyses incorporating the complex survey design of the data were used to examine associations between identified factors and families' receipt of necessary behavioral health and social services.

Findings. In the first study, caseworkers' work climate moderated payment structures intended to restructure service delivery. In the second study, designation of agency accountability and access to

shared information systems positively influenced youth receipt of behavioral health services. In the third and final study, child welfare agencies' access to and supplementation of Medicaid funds was associated with the percentage of children receiving mental health services.

Implications. Child welfare policymakers, administrators, and researchers seeking to improve service access for children and families must consider the contexts in which these services are embedded, as well as how child welfare agencies' internal and external environments may interact to influence service use.

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TABLE OF CONTENTS

List of Tables	vii
List of Figures.....	viii
List of Abbreviations.....	ix
Chapter I. Introduction	1
Specific aims.....	3
Policy significance of the research	6
Chapter II. Background and conceptual framework.....	8
How does the child welfare system work?.....	8
Child and family well-being: the importance of health and social services	11
Conceptual framework: the need for an ecological perspective	12
Overview of Chapters III-V.....	16
Chapter III. Performance-based contracting, caseworker role overload, and service provision.....	19
Methods	22
Results	29
Discussion	31
Chapter IV. Inter-agency collaboration and behavioral health services for youth involved with child welfare and juvenile justice.....	42
Methods	46
Results	52
Discussion	54
Chapter V. How child welfare agencies fund mental health services for children.....	63
Methods	67
Results	73
Discussion	74
Chapter VI. Summary.....	86
Limitations	87
References	90

LIST OF TABLES

Table 1. Descriptive statistics	35
Table 2. Model results (PBC and overload): Average caseworker hours per month	36
Table 3. Model results (PBC and overload): Caregiver social services	37
Table 4. Model results (PBC and overload): Caregiver behavioral health	38
Table 5. Model results (PBC x overload): Average caseworker hours per month	39
Table 6. Model results (PBC x overload): Caregiver social services	40
Table 7. Model results (PBC x overload): Caregiver behavioral health	41
Table 8. Descriptive statistics	59
Table 9. Comparison of youth under different jurisdictions	60
Table 10. Logistic regression models predicting mental health service use	61
Table 11. Logistic regression models predicting substance abuse treatment	62
Table 12. Local child welfare agencies' use of child welfare funds	80
Table 13. Descriptive statistics	81
Table 14. Multiple regression model: % Children receiving mental health assessments	82
Table 15. Multiple regression model: % Children receiving needed mental health services	83

LIST OF FIGURES

Figure 1. How the child welfare system works	9
Figure 2. Extension of the ecological perspective to the organizational level.....	14
Figure 3. Application of the ecological perspective to child welfare	16

LIST OF ABBREVIATIONS

CCCW	Caring for Children in Child Welfare
CFSRs	Child and Family Service Reviews
CPS	Child Protective Services
EPSDT	Early Periodic, Screening, Diagnosis, and Treatment
NDAS	Child Welfare League of American National Data Analysis System
NSCAW	National Survey of Child and Adolescent Well-Being
PBC	Performance-based contracting

CHAPTER I: INTRODUCTION

Research indicates that child welfare agencies are serving a population of children and families with increasingly severe and costly physical and behavioral health care needs (Blome & Steib, 2004; Scarcella, Bess, Zielewski, Warner, & Geen, 2004). Child welfare agencies, also known as Child Protective Service (CPS) agencies, intervene in families' lives when caregivers are unable to ensure their children's safety. Staff at child welfare agencies investigate allegations of maltreatment and take steps to accomplish the following three goals: (1) *safety*, or protection of the child from abuse and neglect and maintenance of the child within the home when possible; (2) *permanency*, or stability in children's living arrangements and family relationships; and (3) *child and family well-being*, ensuring that children's educational, physical, and behavioral health needs are being met, and that caregivers are able to provide for their children's needs (Child Welfare League of America, 1989).

Successful achievement of child welfare agency outcomes generally requires that agencies meet children and families' needs through case management and service delivery (McCarthy, Van Buren, & Irvine, 2007). Quite often, the services that children and their families need most (e.g. education and behavioral health services such as mental health and substance abuse treatment) are offered outside of the child welfare agency (Golden, 2009). In facilitating the delivery of services from external providers, caseworkers within child welfare agencies must take into consideration many factors: the availability of local service providers; the financial resources available to fund service provision; potentially differing timelines for child placement and for treatment; and the need to coordinate service delivery with all other systems with which children and families are involved (Howell, Kelly, Palmer, & Mangum, 2004; Lyons & Rogers, 2004; Raghavan, Inkelas, Franke, & Halfon, 2007). As the high levels of unmet service need suggest (Burns, et al., 2004; Hurlburt, et al., 2004; Risley-Curtiss, Combs-Orme, Chernoff, & Heisler, 1996), caseworkers are often not successful at managing these complex tasks.

Although child welfare agencies want to improve services for children and their families, child welfare policy makers and administrators currently lack empirical guidance on how to successfully implement performance improvement in this area (Courtney, 2000a; Zeller & Gamble, 2007). Existing research on child welfare agencies has focused primarily on the effectiveness of child welfare interventions at the individual level (caseworker, caregiver, or child). Contextual and organizational factors that could better explain variance in service delivery, particularly delivery of health and social services, are under-examined in child welfare, despite substantial evidence in the health and human services literature that they are important predictors of individual-level outcomes (Keiser & Soss, 1998; Sandfort, 2000; Spector, 1997). The few empirical studies in child welfare examining the effect of one or more contextual and/or organizational factors suggest the need for additional research to better delineate the relationship between child welfare agency management practices and individual-level service experiences (Glisson & Green, 2006; Hurlburt, et al., 2004; McBeath & Meezan, 2006, 2008; Meezan & McBeath, 2008; B. Smith & Donovan, 2003; Yoo & Brooks, 2005).

Current social work research has shaped child welfare practice largely by helping caseworkers develop an understanding of how embedded child needs are in family dynamics (e.g. Belsky, 1980). Similarly, a systematic examination of the context in which services are delivered could help child welfare policymakers and administrators improve child welfare agency management practices.

In this dissertation project, an ecological perspective was applied to investigate several major factors influencing child welfare agencies' ability to facilitate delivery of health and social services to children and their families. As will be outlined in more depth in Chapter II, the ecological perspective makes two important contributions to existing child welfare research: First, it suggests that child welfare agency behavior is influenced not only by intra-organizational determinants but also by the interaction of the child welfare agency with its external environment. Second, the ecological perspective divides the child welfare agency environment into multiple layers. This dissertation focuses on the following three layers: (1) *the micro-environment*, which represents the child welfare agency and its internal operations; (2) *the intermediate or meso-environment*, which captures the

inter-relationships between all of the organizations with which the child welfare agency is involved; and (3) *the macro-environment*, or the greater political, cultural, and resource context in which all of these organizations are embedded. The division of the child welfare agency and its environment into these layers allows for a nuanced examination of some of the different environmental factors contributing to variations in service delivery between agencies. It also allows for consideration of how factors at one level might influence dynamics in another.

By approaching variations in child welfare agency service delivery from an ecological perspective, several key research questions are identified that should be considered if sustainable performance improvement is to be implemented. In addressing these questions, secondary data from a national child welfare survey are used to investigate associations between contextual and organizational factors and families' receipt of health and social services. The goal of this research is to provide child welfare policy makers and administrators with empirical evidence that will help guide the process of improving service delivery to children and families involved with the child welfare system.

Specific Aims

This dissertation is organized around three primary research objectives. Each objective examines factors corresponding to a level of environmental influence – micro, meso, and macro – identified through application of the ecological perspective. The specific aims, data, and methods employed in the analyses are summarized briefly in this section.

Specific Aim 1: To examine how caseworkers' work climates affect associations between performance-based contracting and service access for families involved with child welfare. As mentioned previously, the child welfare micro-environment consists of the organization and its internal operations; this conceptualization includes factors such as the organizational climate (i.e. caseworkers' perceptions and emotional responses to the characteristics within their work environment), which prior research has established is an important determinant of individual service outcomes (e.g. Glisson & Hemmelgarn, 1998). In contrast, the child welfare agency macro-environment refers to the greater social, political, and economic context in which agencies are

embedded. Performance-based initiatives, which provide contracted agencies with financial incentives and/or sanctions to achieve selected outcomes, are an example of factors within the child welfare macro-environment that influence how agencies administer and structure service delivery. Although policymakers increasingly rely on performance-based initiatives as a means of improving agency performance (McCullough & Schmitt, 2003), there is a lack of research examining how internal agency dynamics moderate the effects of such contracts on child welfare outcomes. In this specific aim, I developed a cross-level framework for testing research hypotheses for how caseworker role overload may moderate associations between performance-based contracting (PBC) and child welfare agencies' delivery of services. Two theories were combined in the development of this framework: (1) agency theory, which examines the conditions under which performance-based contracts are optimally implemented; and (2) theories of bureaucratic discretion, which describe how work conditions influence the implementation of management directives. This framework was tested using data from the National Survey of Child and Adolescent Well-Being (NSCAW), a national survey of children and families in the child welfare system. Analyses were conducted using single-level models that were adjusted to accommodate the complex survey design of the data as well as the clustering of individuals within child welfare agencies.

Specific Aim 2: To examine how inter-agency collaboration between local child welfare and juvenile justice agencies influences receipt of behavioral health services for youth involved with both systems. The child welfare meso-environment characterizes the organization's relationship with the local market (e.g. inter-relations with other organizations to facilitate acquisition of resources or distribution of services). From a service delivery standpoint, these relationships most commonly involve educators, other health and social service providers, and the criminal justice system. Existing studies on inter-organizational relationships in child welfare have examined associations between child welfare agency ties with educators and providers and service receipt for children and their families (Cottrell, Lucey, Porter, & Walker, 2000; Hurlburt, et al., 2004; B. Smith & Mogro-Wilson, 2007). However, despite evidence that the courts play an important role in facilitating service access for families involved with child welfare (Fedoravicius, McMillen, Rowe, Kagotho, & Ware, 2008), there is very little research examining collaboration between the child welfare and

juvenile justice agencies. In particular, there is little empirical evidence examining service outcomes for crossover youth, or those involved with both the child welfare and juvenile justice systems. To address this gap in the literature, national data from NSCAW and the Caring for Children in Child Welfare (CCCW) study were used to examine associations between three dimensions of collaboration – jurisdiction, shared information systems, and overall connectivity – between local child welfare and juvenile justice agencies and crossover youths’ odds of receiving necessary behavioral health services. Analyses were conducted using single-level models that were adjusted to accommodate the complex survey design of the data as well as the clustering of adolescents within child welfare agencies.

Specific Aim 3: To examine associations between the accessibility of Medicaid, child welfare agencies’ supplementation of Medicaid funds, and children’s access to mental health services. As mentioned previously, the child welfare agency macro-environment refers to the greater social, political, and economic context in which the child welfare agency is embedded. Existing research suggests that child welfare agencies’ local resource context – and specifically agencies’ ability to access Medicaid dollars – may contribute significantly to variations in mental health service access for children involved with child welfare (e.g. Raghavan, et al., 2007; Scarcella, Bess, Zielewski, & Geen, 2006; Snowden, Masland, Wallace, & Evans-Cuellar, 2007); however, there is currently a lack of empirical research examining this issue. Therefore, in this specific aim I examined how the accessibility of Medicaid funding and the use of child welfare funds to supplement Medicaid payments was associated with children’s likelihood of receiving mental health assessments and necessary mental health services. Data on children’s service access were from the National Survey of Child and Adolescent Well-Being (NSCAW) and funding data were from the Caring for Children in Child Welfare (CCCW) study. Given the analytic focus on child welfare agencies’ ability to facilitate children’s access to mental health services, the unit of analysis was the child welfare agency; data were aggregated to the agency level. Ordinary least squares regression models were used to analyze the data, with adjustments to accommodate the complex survey design of the data as well as the clustering of agencies within states.

Cumulatively, the analyses outlined above allow for a more nuanced view of some of the varied contextual and organizational factors that must be considered when implementing effective performance improvement in child welfare.

Policy Significance of the Research

Child welfare agency caseloads are on the rise. In 2001, child welfare agencies received nearly three million referrals of maltreatment involving five million children. Approximately 903,000 of these cases were substantiated after investigation and warranted further involvement with the child welfare system (Childrens Bureau, 2003). Assessment of the children and families involved with the system reveals a population with increasingly severe physical and behavioral health care needs requiring the provision of additional, more costly services (Burns, et al., 2004; Geen, Sommers, & Cohen, 2005).

Currently, federal, state, and local government funding support child welfare services provided by public agencies; in 2004, this amount was estimated at \$23.4 billion, a 40% increase in “real term” federal spending since 1996 (Scarcella, et al., 2006). Despite this increase, children’s overall share of GDP and domestic spending is declining and many children’s programs are struggling to balance increased demand for services with the reality of limited resources (Carasso, Steuerle, & Reynolds, 2007).

The challenges of rising caseloads, higher levels of service need, and limited resources have negatively affected child welfare agencies’ ability to meet federal performance standards. The Child and Family Service Reviews (CFSRs), an evaluative mechanism authorized under the 1997 Adoption and Safe Families Act, are used by the federal government to assess state child welfare agencies’ conformity to federal standards. Results from the first round of CFSRs found that no state met more than two of the seven performance standards, and 16 states failed to meet any of the benchmarks (Childrens Bureau, 2005). Child welfare agencies have particularly struggled to meet child and family well-being outcomes, which in the CFSR process are evaluated as whether children and their families are receiving services appropriate to meet their physical and behavioral health needs (McCarthy, et al., 2007).

The CFSR process provides financial incentives for states to reform their services in order to be successful in the next round of reviews. However, as noted previously, child welfare agencies currently lack empirical guidance on how to proceed (Courtney, 2000a; Zeller & Gamble, 2007). Frequently, innovations from other sectors are adopted without considering the service needs of children and their families or how the distinctive service context of child welfare will impact outcomes. There is a particular need for research that takes into account both contextual and organizational factors that influence service delivery. For example, organizational climate, or caseworkers' perceptions and emotional responses to the characteristics within their work environment, could influence how caseworkers choose to implement directives from child welfare agency managers. Inter-organizational ties that child welfare agencies have with other organizations, such as behavioral health providers and juvenile justice, could also influence their ability to facilitate service delivery. Finally, the state resource context in which all of these organizations are embedded also affects service delivery, by determining the amount and the flow of available resources between organizations.

By applying an ecological perspective to the child welfare sector, this project develops a framework that allows for the examination of associations between factors at each level of the child welfare agency environment and local child welfare agencies' ability to facilitate the delivery of necessary health and social services to the children and families that they serve. For many child welfare agencies, improving access to services for children and their families is critical for successful overall performance improvement. Findings from this project may provide policy makers, state child welfare administrators, and frontline managers with better insight into the factors that must be considered in implementing effective performance improvement initiatives in this sector.

CHAPTER II: BACKGROUND AND CONCEPTUAL FRAMEWORK

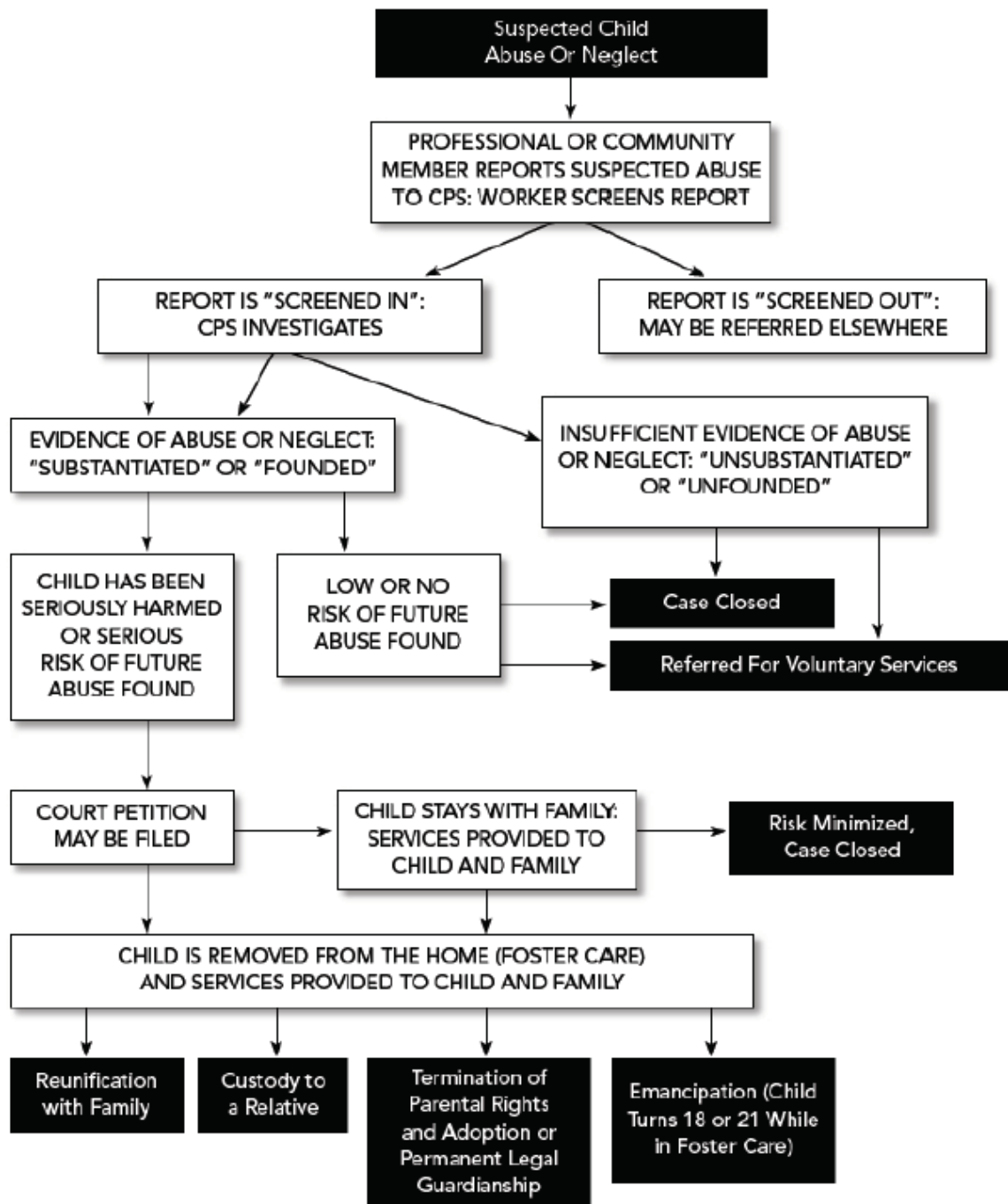
How Does the Child Welfare System Work?

The modern-day child welfare system is based on an ideological foundation of children's rights, namely the belief that children have the right to government protection from abuse and neglect (Costin, Karger, & Stoesz, 1996; Rosenthal & Louis, 1985). The child welfare system is designed to function as a safety net for children, and therefore becomes involved with families only when caregivers fail to fulfill their child-rearing obligations (Scarcella, et al., 2004).

As shown in Figure 1, the child welfare system is activated when reports of child abuse or neglect are made (Child Welfare Information Gateway, 2006). Although states have discretion in how their child welfare systems are organized, in general it is the Child Protective Services (CPS) agency, hereafter referred to as the child welfare agency, which responds to reports of child abuse or neglect. Caseworkers at the child welfare agency "screen" the reports to determine whether an investigation or assessment of families' need for child welfare services is warranted (Merkel-Holguin, Kaplan, & Kwak, 2006). A report can be "screened out" if there is not enough information on which to follow up or if the reported situation does not meet the state's legal definition of abuse or neglect.

When a report is "screened in" – meaning the caseworker determines an investigation or assessment is warranted – one or more caseworkers investigate the child's situation in order to determine if the child is safe; if abuse or neglect has occurred; and if there is a risk of re-occurring maltreatment (Child Welfare Information Gateway, 2006). In states that have a differential or "alternative" response system, child welfare agencies will take different actions depending on factors such as the type and severity of the alleged maltreatment, the number and sources of previous reports, and the willingness of the family to participate in services (Merkel-Holguin, et al., 2006). For example, in addition to gathering evidence about whether maltreatment occurred, the investigating caseworker may also identify supports and services needed by the family.

Figure 1. How the Child Welfare System Works



[From the Child Welfare Information Gateway. Available at www.childwelfare.gov/pubs/factsheets/cpswork.cfm.]

At the end of the investigation, the caseworker may determine whether the allegation of child abuse or neglect is substantiated (or “indicated”) or not, as well as whether the child is at risk of future maltreatment. In general, if the investigating caseworker determines that the allegation of maltreatment cannot be proven, the case will be closed; however, in some jurisdictions the caseworker may still refer the family to services available within the community or with other service systems.

If the investigative caseworker determines that the allegation of maltreatment was substantiated, then the child’s case remains open and the child and his or her family will receive services from the child welfare agency. The precise course of action taken by the child welfare agency depends on a number of factors: state policy; the severity of maltreatment; an assessment of the child’s immediate safety; the risk of continued or future maltreatment; the services available to address the family’s needs; whether the child was removed from the home; and whether a court action to protect the child was initiated (Child Welfare Information Gateway, 2006).

Regardless of the actions taken, the three primary goals of child welfare agencies are to establish: (1) *safety*, or protection of the child from abuse and neglect, and safe maintenance of the child within the home whenever possible and appropriate; (2) *permanence*, or stability in the child’s living arrangements and family relationships; and (3) *child and family well-being*, ensuring that children’s educational, physical, and mental health needs are being adequately met and that caregivers have enhanced capacity to provide for their children’s needs (Child Welfare League of America, 1989; Childrens Bureau, 2005). Safety, permanence, and well-being are the three major categories of outcomes that child welfare agencies are held accountable for under the federal Child and Family Services Review. As mentioned previously, the Child and Family Services Review process includes provisions for withholding federal child welfare funds from states that fail to establish substantial conformity with the review; therefore, child welfare agencies have significant incentive to be successful in this review.

Child and Family Well-Being: the Importance of Health and Social Services

Although it is an important facilitator of child and family well-being, access to health and social services for children and their families has emerged as a particularly critical and challenging goal for child welfare agencies to achieve (GAO, 2004). The majority of families engaged with the child welfare system have behavioral health and/or other health and human service needs that must be addressed if the other two goals – safety and permanence – are to be met (Barnes, et al., 2005; McCarthy, et al., 2007). Children in the child welfare system have disproportionately high rates of emotional and behavioral problems, and parental substance abuse is a factor in at least half of child welfare cases (Landsverk, Garland, & Leslie, 2002; McAlpine, Marshall, & Doran, 2001).

Despite the importance of service receipt for this population, delivery of health and social services for this population is not adequate to meet families' needs. Research suggests that only 25-50% of children in child welfare receive necessary mental health services, and the statistics for other services are not significantly better (Burns, et al., 2004; Hurlburt, et al., 2004; Risley-Curtiss, et al., 1996).

Inadequate service receipt, particularly for behavioral health problems, is a serious issue, with ramifications not only for child welfare agencies but for society as a whole. At the child welfare agency level, the complex behavioral needs of children in the child welfare system and the lack of specialized providers to address needs can lead to placement disruptions, instability, and difficulty in establishing and reaching a permanent goal (Newton, Litrownik, & Landsverk, 2000; Rubin, et al., 2004). Reunification efforts are also limited by the availability of mental health and substance abuse services for parents, and reentries of their children into care can often be attributed to the same service deficits (McCarthy, et al., 2007). Untreated behavioral health problems also have a detrimental effect on child development, and are associated with academic difficulties, increased high school drop-out rates, and increased risk of homelessness and/or involvement with the criminal justice system in later life (Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Taussig, 2002; Zima, et al., 2000).

Given the importance of health and social services to the well-being of children and families, this project focused on examining organizational factors that influenced children and families' access to these services.

Conceptual Framework: the Need for an Ecological Perspective

Most research in child welfare has focused primarily on examining how factors at the individual level (caseworker, caregiver, or child) influence child and family outcomes. Contextual and organizational factors that may also contribute to variation in outcomes, particularly in the delivery of health and social services to children and families, have been under-examined by child welfare researchers. However, the few existing studies in this area suggest that these contextual and organizational factors are important predictors of individual-level outcomes, particularly service access (Glisson & Green, 2006; Hurlburt, et al., 2004; McBeath & Meezan, 2006, 2008; Meezan & McBeath, 2008; B. Smith & Donovan, 2003; Yoo & Brooks, 2005; Yoo, Brooks, & Patti, 2007). For example, in a study of youth mental health service use, Stiffman and colleagues (2001, 2004) found that provider variables explained more variance in service use than did client variables. Glisson & Green (2006) found that children served by child welfare case management units with constructive organizational cultures were more likely to receive needed mental health care than those served by units with less constructive organizational cultures. Hurlburt, Leslie, Landsverk, et al. (2004) found that increased coordination between local child welfare and mental health agencies was positively associated with children's use of specialty mental health services, as well as with decreased differences in rates of service use between white and African-American children. These findings indicate the need for more systematic research investigating the effects of variation in contextual and organizational factors on child welfare outcomes.

In this project, application of an ecological perspective to child welfare allows for the development of a framework that systematically evaluates several contextual and organizational factors influencing child welfare agencies' ability to facilitate service delivery for children and their families. As mentioned previously, the ecological perspective makes two important contributions to existing child welfare research: (1) it suggests that child welfare agency behavior is influenced not

only by intra-organizational determinants but also by the interaction of the child welfare agency with its external environment; and (2) it divides child welfare agencies' environments into multiple levels of influence.

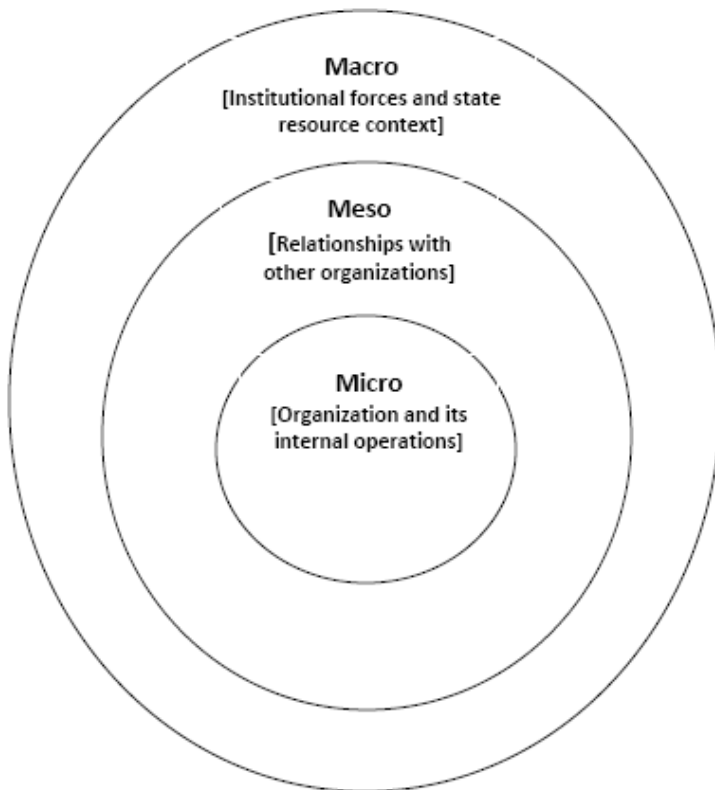
The ecological perspective was originally developed by Bronfenbrenner in the 1980s to explain human development (Bronfenbrenner, 1979, 1989). Researchers subsequently used the ecological perspective to develop a more nuanced understanding of the different factors that influence individual behavior: McLeroy et al. (1988) applied the ecological perspective to propose a new type of health promotion model that focused attention on both individual and social environmental factors as targets for health promotion interventions. Stokols (1996) used this perspective to better explain the strengths and limitations of different community health programs focused on modifying individual behavior.

In recent years, researchers have extended the ecological perspective to the organizational level as well. For example, Johnson (2008) recently applied it to schools, arguing that student achievement could only be understood through examining the complex ecological context in which schools are located. According to Johnson, determinants of individual student achievement are not only located within the school (micro-level) but also within student's home environment (meso-level, due to the interaction of school and family); the cultural, political, social and economic climate of the local community (macro-level); and the changes within these systems that occurs over time (chrono-level). Consequently, Johnson claims that empirical research that does not consider the complexity of the educational system and the different layers within it may ultimately yield "potentially harmful [results] as the basis for policy, reform, and accountability efforts" (p.9).

A similar argument can be applied to child welfare. Child welfare agencies are responsible for delivering services to ensure child safety, permanency, and overall family well-being; however, in reality such outcomes are not fully under child welfare agency control and can only be understood by examining the complex context – both external and internal to the child welfare agency – in which these services are delivered. This argument is consistent with recent child welfare and systems of care research, in which child welfare services are described as embedded within a variety of settings (e.g. Stroul & Friedman, 1986; R. Wells, 2006). Application of the ecological perspective allows for

the development of a framework through which such factors can be systematically examined. In this dissertation, three levels of environmental influence are examined: the micro-environment, the intermediate or meso-environment, and the macro-environment (Figure 2). Although equally important, the time-based dimension (chrono-level) was omitted due to limitations of the data used within this study: data on child welfare agency management practices was only collected at a single point in time.

Figure 2.
Extension of the ecological perspective to the organizational level:
A conceptual framework for the interaction of micro, meso, and macro environments



[Adapted from U. Bronfenbrenner (1979) *the Ecology of Human Development* and from B.J. Hodge & W.P. Anthony (1979) *Organization Theory: An Environmental Approach*.]

The **micro-environment** describes the organization and its internal operations. Examples of factors within the micro-environment of child welfare agencies that influence their ability to facilitate service delivery to children and their families include organizational culture and organizational climate, two factors known to influence service delivery (Aarons & Sawitzky, 2006; Glisson & James,

2002). Organizational culture is defined as the individual organization's norms and expectations regarding how people behave and how things are done in an organization, while organizational climate reflects caseworkers' perceptions of and emotional response to the characteristics of their work environment (Glisson & Green, 2006; James & Sells, 1981).

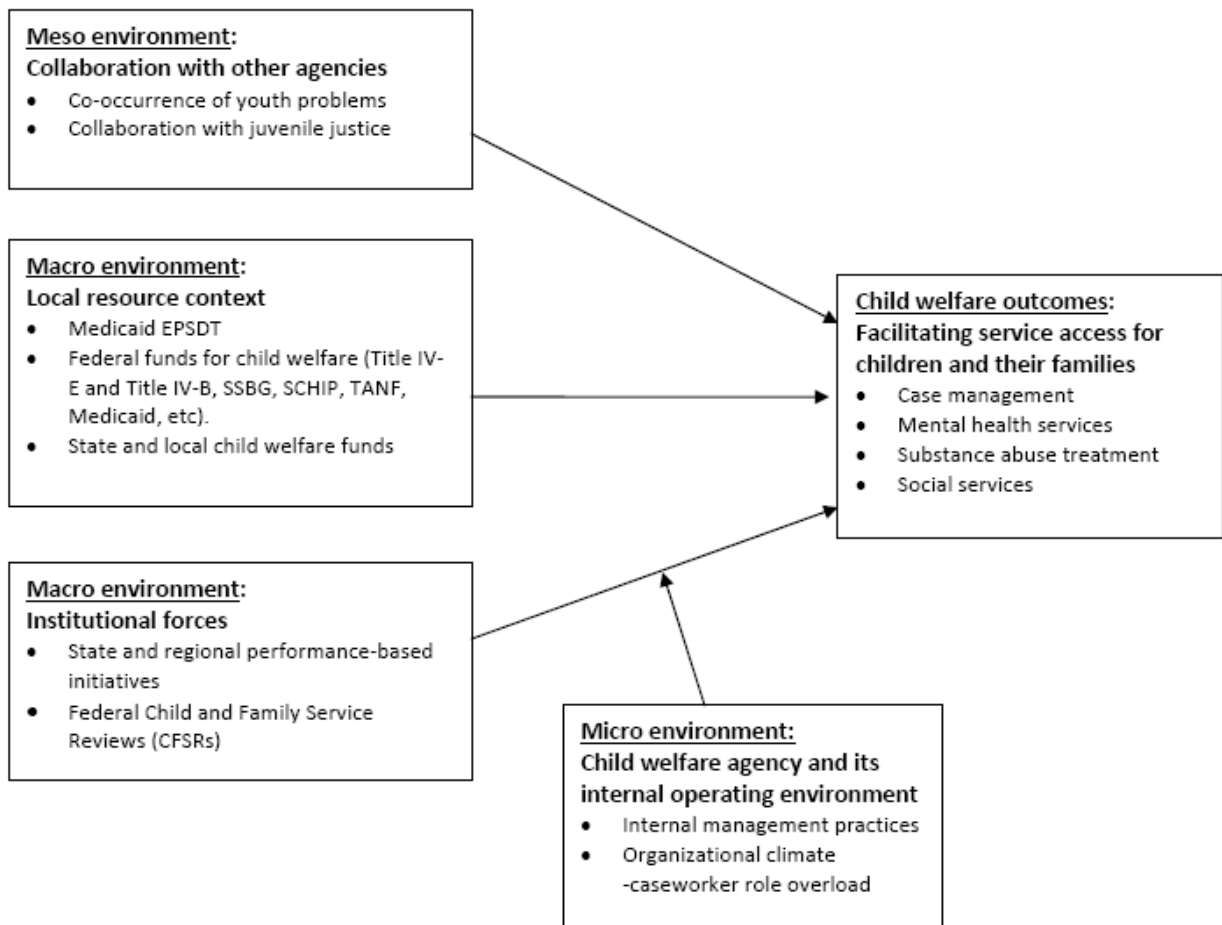
The **intermediate, or meso-environment**, captures the relationship between the organization and the other organizations with which it is involved (Hodge & Anthony, 1979). From the standpoint of explaining patterns of service delivery in child welfare agencies, these other organizations include schools, behavioral health agencies, and criminal justice agencies such as juvenile courts. The flow of information and resources between the child welfare agency and these other types of organizations has a strong influence on patterns of service delivery. Schools are frequently the first to identify behavioral health need in children, behavioral health agencies are essential to the actual provision of services, and the courts play an important role in enabling or inhibiting service access for many families (Burns, et al., 1995; Fedoravicius, et al., 2008).

Finally, the **macro-environment** refers to the social, cultural, political, and economic forces that shape the overall environment in which the organization and all of the other organizations it is involved with are embedded. Factors in the macro environment affect both the micro and meso levels of the environment as well. For child welfare agencies, examples of relevant forces within the macro environment that influence organizational behavior include the current economic recession or new legislation that alters how resources are allocated to publicly funded systems.

The ecological perspective suggests that in order for researchers and policymakers to understand and effectively change individual or organizational behavior, they must consider influences at all of these different levels. Application of this perspective to child welfare agencies allows for the development of an empirical framework that considers several of the major contextual and organizational factors influencing local child welfare agencies' ability to deliver services, specifically health and social services, to children and their families (Figure 3). In child welfare, the ecological perspective has previously been applied at the individual level to understand factors in the individual, family, and the community that influence the likelihood of child maltreatment (e.g. Belsky, 1980); however, this is the first time that the ecological perspective has been applied to child welfare

agencies to better understand how factors at different levels (both within and external to the organization) influence agencies' ability to facilitate service access for the children and families that they serve.

Figure 3.
Application of the ecological perspective to child welfare:
Empirical framework and specific aims



Overview of Chapters III-V

In the next three chapters, I briefly review the existing literature relevant to each specific aim, discuss the gaps in the literature, and explain the research hypotheses to be tested. Chapter III focuses primarily on the increased use of privatization, and specifically performance-based contracting (PBC) in the child welfare sector. Privatization of public programs, particularly in the

health and human service sectors, has risen dramatically since the late 1990s and has continued to gain popularity in the child welfare sector as a way for state and local child welfare agencies to reconfigure how their services are delivered (Childrens Bureau, 2005; GAO, 1997; Savas, 1987; Van Slyke, 2003). However, there is a lack of research on the extent to which factors within the internal agency climate moderate associations between PBC and service outcomes for families in child welfare. Therefore, in this chapter, I examine how the interaction of factors in the child welfare agency macro- and micro-environment (use of PBC and caseworker role overload, respectively) influenced the services received by families involved with child welfare.

Chapter IV focuses on examining associations between a factor at the meso-level, inter-agency collaboration, and youth's behavioral health service outcomes. Children and youth who have been abused and/or neglected are at elevated risk of becoming delinquent and therefore being involved with both the child welfare and juvenile justice systems (Thornberry, Huizinga, & Loeber, 2004; Widom, 1989; Wiig & Widom, 2003). Provision of behavioral health and social services such as housing or mentorship programs increases the likelihood that youth involved with these systems will successfully transition back to the community (e.g. Pullmann, et al., 2006). Behavioral health services are considered particularly important for crossover youth, or youth involved simultaneously with both child welfare and juvenile justice (GAO, 2003; Ross, 2009). These youth face barriers to accessing behavioral health services that could potentially be overcome by strengthening collaborative ties between child welfare and juvenile justice agencies. Given the lack of research in this area, my analyses at the meso-level examine the role of collaboration between local child welfare and juvenile justice agencies in facilitating behavioral health service access for crossover youth.

Finally, in Chapter V, associations between a macro-level factor, child welfare agencies' access to and supplementation of Medicaid funds, and children's mental health access are examined. Although prevalence data indicate that up to 86% of children involved with child welfare have one more physical, development, or mental health problems, less than half of these children receive necessary mental health services (Burns, et al., 2004; Leslie, et al., 2005; Leslie, et al., 2003). Challenges with accessing Medicaid have been described as a major barrier to children's receipt of services (e.g. Halfon, et al., 2002). In particular, the availability of resources to pay for children's

mental health services, such as child welfare funds and the Medicaid Early Periodic, Screening, Diagnosis, and Treatment (EPSDT), tend to vary significantly at the local level. Understanding how local variation in these funding streams influences children's mental health service access could help clarify the importance of programs such as Medicaid EPSDT for this vulnerable population.

CHAPTER III: PERFORMANCE-BASED CONTRACTING, ROLE OVERLOAD, AND SERVICE PROVISION

Since the late 1990s, state and local governments have reconfigured how child welfare services are delivered in response to rising numbers of children in foster care, concern over the costs of child welfare service provision, and pressure to meet federal performance standards under the Child and Family Service Review (CFSR) process established under the Adoption and Safe Families Act (ASFA) (Childrens Bureau, 2005; GAO, 1997; Yilmaz, Hoo, Nagowski, Rueben, & Tannenwald, 2007). Public efforts at reform have largely involved privatizing services under the assumption that private child welfare agencies will more efficiently and effectively serve families than public bureaucracies (Van Slyke, 2003; Wright & Radel, 2007). Restructuring has also involved manipulating the payment structures associated with government contracts so that contractors share some of the financial risks, or cost uncertainties of child welfare service provision (McCullough & Lee, 2007). As a result, performance-based contracts, which provide contracted agencies with financial incentives and/or sanctions to achieve selected outcomes, have become particularly popular in child welfare (McCullough & Schmitt, 2003; Wulczyn, 2000).

Performance-based assessments in child welfare have generally been limited to the most easily measured outcome, permanency or the placement of youth into a stable residence (Blackstone, Buck, & Hakim, 2004; Kearney & McEwen, 2007; McCullough, 2004; McCullough & Lee, 2007; Unruh & Hodgkin, 2004). Almost all current performance-based contracts within child welfare focus on facilitating faster permanency by providing financial incentives (either through rewards and/or sanctions) for contractors to move children quickly out of foster care and into a permanent setting, whether through parent-child reunification, kinship foster care, or adoption.

However, because child welfare services do not meet many of the conditions believed necessary for optimal use of performance-based contracting, these contracts may have unanticipated consequences (Eisenhardt, 1989; Stroh, Brett, Baumann, & Reilly, 1996). For example, child welfare outcomes such as safety and well-being are difficult to measure (Tilbury, 2004). Child welfare activities also frequently involve joint or team efforts, making it difficult to assign responsibility for outcomes to one individual or agency. Moreover, factors in the external environment contribute heavily to variation in child welfare agency performance such as challenges related to inter-organizational collaboration or limited provider availability (Child Welfare League of America, 1989; Van Slyke, 2003; S. Wells & Johnson, 2001). In high-risk environments, shifting financial risk to contractors may not be optimal because it provides incentives for child welfare contractors to reduce their own risk exposure, regardless of whether their actions have a detrimental effect on desired performance outcomes in the long term (Bloom & Milkovich, 1998). This problem may be magnified in the organizations with which child welfare agencies frequently contract, which already tend to not have many “slack,” or excess, resources to protect themselves from financial uncertainty (McCullough, 2004; Van Slyke, 2003). Financial risk may therefore push these organizations into implementing strategies for conserving and rationing limited resources, such as understaffing, that make it very difficult for workers to employ best practices (Lipsky, 1980; Prottas, 1979).

To some extent, child welfare administrators have tried to compensate for the vulnerability of the agencies with which they contract by including risk-mitigating strategies in their performance-based contracts. For example, performance-based contracts may include catastrophic stop-loss provisions or risk-pools. However, such provisions do not address the underlying issue, which is that performance-based contracts focused exclusively on permanency may not provide caseworkers with incentives to follow through on aspects of case management other than those directly related to time to permanent placement. For example, even though caseworkers’ training curricula emphasizes a family-oriented approach, evidence suggests that caseworkers often find working with permanent caregivers time-consuming (B. Smith & Donovan, 2003). Meeting permanent caregivers’ needs often requires provision of multiple services, including mental health, substance abuse, and social services such as housing or legal aid (Choi & Ryan, 2007; Cleaver, Unell, & Aldgate, 2000; Jones, 1998).

While such services can result in improved outcomes for caregivers and their children (DePanfilis & Zuravin, 2002; Marsh, Ryan, Choi, & Testa, 2006), the time involved in caregiver service provision can be problematic for caseworkers because timelines for provision of mental health and substance abuse treatment often conflict with preferred child welfare timelines for establishing permanency (Drabble, 2007; Young & Gardner, 2002). Consequently, pressure to meet permanency deadlines can cause caseworkers to de-prioritize this work (McBeath & Meezan, 2010; B. Smith & Donovan, 2003). Performance-based contracts that emphasize speed of child permanency placements and direct caseworker efforts towards that goal may further encourage overworked caseworkers to de-prioritize permanent caregiver engagement and service receipt.

There is currently relatively little empirical evidence as to how performance-based contracting within child welfare influences child welfare outcomes other than permanence. However, the few existing studies, all of which have occurred in county- or state-specific settings, suggest that while financial incentives positively influence contractors to more swiftly establish permanency, they may also promote these goals at the expense of other outcomes (McBeath & Meezan, 2008; Meezan & McBeath, 2008). In particular, findings indicated that factors within the contracting agencies may moderate the influence of performance-based contracting on child welfare agency outcomes. For example, research on a performance-based initiative in a Michigan county found that relative to children in agencies reimbursed through fee-for-service contracts, children served by agencies with performance-based contracts received fewer non-therapeutic services such as case management or social services, and were less likely to be reunified with their families (McBeath & Meezan, 2008; Meezan & McBeath, 2008). Reunifying children with their families required greater service efforts on the part of caseworkers than other permanency outcomes, such as adoption or kinship care; therefore it was speculated that child welfare agencies' response to performance environments affected client outcomes partially through the services provided by caseworkers (McBeath & Meezan, 2010).

Currently, child welfare agencies in over half of states in the U.S. have experimented with some form of performance-based contracting, and more plan to do so in the future (Blackstone, et al., 2004; Kearney & McEwen, 2007; Unruh & Hodgkin, 2004). Research in other social service sectors

has shown that the effect of performance-based contracting on desired outcomes is influenced by the working conditions of the people charged with providing services under these contracts (Bloom & Milkovich, 1998; Eisenhardt, 1989; Stroh, et al., 1996). However, most child welfare agencies are developing performance-based contracts within child welfare with very little empirically guided information about how these conditions may influence desired outcomes.

There is a growing awareness within child welfare of how factors within the internal agency environment – such as caseload, supervisor support, and peer support – influence caseworker practices and client outcomes (Glisson & Green, 2006; Glisson & Hemmelgarn, 1998; Yoo, 2002; Yoo & Brooks, 2005). However, there is still a lot to learn about how these conditions moderate the relationship between use of performance-based contracts and desired child welfare outcomes.

This study contributes to the literature by using data from a national survey of children and families involved with the child welfare system to examine associations between use of performance-based contracting, the internal child welfare agency environment, and service outcomes in child welfare. Specifically, we hypothesize that caseworker role overload, or having too many demands given the time available to satisfy them (Coverman, 1989; Harrison, 1980; Hecht, 2001; Malm, 2001), negatively moderates the relationship between performance-based contracting and service provision. Services such as case management, in-home services, and permanent caregiver receipt of necessary behavioral health and social services were selected to determine whether families' multidimensional needs were being met, and also because of their association with child welfare outcomes such as parent-child reunification (GAO, 2004; McCarthy, et al., 2007; Miller, Fisher, Fetrow, & Jordan, 2006).

Methods

Data source

Data were drawn from the Child Protective Services (CPS) cohort of the National Survey of Child and Adolescent Well-Being (NSCAW), the only national study of children in the U.S. child welfare system (Dowd, et al., 2004). NSCAW was funded by the Administration for Children and

Families within the U.S. Department of Health and Human Services and was carried out by Research Triangle Institute (RTI) International. A two-stage stratified design was used to sample children in 92 primary sampling units within 46 states throughout the U.S. Assessments of child and family context and well-being were conducted through interviews with each child, the current caregiver, and the child welfare caseworker at baseline (Wave 1, with first interviews conducted between October 1999 and December 2000), at 12 months (Wave 2), at 18 months (Wave 3), and at 36 months (Wave 4) after the close of the investigation or assessment. Although a fifth wave was collected at 48 months, these data were omitted from the current analyses due to the high attrition rate once youth reached 18 years of age.

Weighted data were used in the current analyses. Participation was adjusted by the probability of selecting the child's county of residence and then the probability of selecting the child given that the child's county of residence was sampled (Dowd, et al., 2004). When incorporated in analyses, these weights yield approximately design-unbiased and consistent estimates for the corresponding population quantities (Christ, Biemer, & Wiesen, 2007; Pfefferman, Skinner, Holmes, Goldstein, & Rasbash, 1998). The result is an almost nationally representative sample of children who have had encounters with the child welfare system, excluding only four states whose human subjects' requirements exceeded the resources of the NSCAW study to accommodate.

Child welfare agency directors were interviewed in Wave 1 about agency use of performance-based measures linked with financial incentives and/or sanctions. Child welfare caseworkers were interviewed about role overload in Wave 2. Additional contextual data were merged with the NSCAW data using county-level identifiers from the 2000 Area Resource File (ARF), the Child Welfare League of America National Data Analysis System (NDAS), the National Survey of Substance Abuse Treatment Services (NSSATS), and from data on county-level mental health shortages (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009). Given the restricted nature of the NSCAW data, the merge was conducted by RTI International at our request.

Analytic samples

At baseline, the initial NSCAW sample included 1664 permanent caregivers whose families were assessed as requiring child welfare agency-funded services and who were served by child

welfare agencies in which the agency director provided information about the agency's use of performance-based contracting. For 622 of these 1664 caregivers, the assigned services caseworker was interviewed about his or her work environment and the services provided to the index family. The final analytic sample for the three models predicting caseworker efforts spent on case management and in-home service provision, and permanent caregivers' receipt of social services was therefore 622 permanent caregivers and their services caseworkers nested within 54 county CPS agencies.

Models examining permanent caregivers' receipt of behavioral health services were further restricted to include only permanent caregivers who needed each type of service (mental health or substance abuse treatment). Application of this restriction reduced the sample for models predicting receipt of mental health services to 461 caregivers and the sample for models predicting substance abuse treatment to 355 caregivers, each nested within 54 county CPS agencies.

Listwise deletion for item missingness in each model reduced the final analytic sample for models predicting caseworker hours and permanent caregivers' receipt of social services to between 515 and 557 permanent caregivers and caseworkers; the final analytic sample for the mental health model to 239 caregivers; and the final analytic sample for the substance abuse treatment model to 143 caregivers nested within 54 county CPS agencies. The majority of item missing was attributed to the caregiver health insurance variable, which was only available for 254 of 461 caregivers in the mental health model, and for 150 of 355 caregivers in the substance abuse treatment model.

Given that sampling weights within NSCAW incorporate survey non-response but not item non-response (Dowd, et al., 2004; Little, 1988), weighted t-tests were conducted on all model variables to determine if the data were missing at random or if a correction for sample selection bias would be required (Allison, 2002; Lee & Marsh, 2000). Results indicated that the cases in the final analytic sample for all models did not differ significantly from those excluded due to missing values for other variables; therefore, it was concluded that the missing data were ignorable.

Measures

Behavioral health service need. Caregivers' need for behavioral health services was based on each investigative caseworker's assessment of the caregiver's need for either mental health services or substance abuse treatment at baseline (Wave 1), as well as on whether the caregiver was

assessed as being depressed or substance dependent (i.e. alcohol and/or drug dependent) using screening scales from the World Health Organization Composite International Diagnostic Interview Short-Form (CIDI-SF) (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998; Walters, Kessler, Nelson, & Mroczek, 2002). The version of the CIDI-SF used in NSCAW provided depression diagnoses based on *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV* criteria (American Psychiatric Association, 1994), and substance-dependence diagnoses based on *Diagnostic and Statistical Manual of Mental Disorders: DSM-III-R* criteria (American Psychiatric Association, 1987). Psychometric research indicates good test-retest and inter-rater reliability and diagnostic validity of the CIDI long-form scale (Wittchen, 1994), as well as high concordance between diagnostic classifications obtained using CIDI-SF and the longer measure (Andrews & Peters, 1998; Rubio-Stipec, Peters, & Andrews, 1999).

Services received by children and families in child welfare. Five dependent variables were used to examine the services received by children and families in child welfare (Table 1). These variables were selected to reflect the child welfare agency's efforts to promote family well-being, and reflect both caseworker practices and the actual services received by permanent caregivers. These variables were: (1) the average number of hours per month the caseworker spent on case management and service referrals for the family; (2) the average number of hours of in-home services the family received each month; (3) the number of social services – such as legal aid, food from a community source, emergency shelter or housing, child care, and referrals for job-related services, organized support groups, or home management training – received by caregivers since entering the child welfare system (Waves 2-4); (4) whether the permanent caregiver received any mental health services since entering the child welfare system (Waves 2-4); and (5) whether the permanent caregiver received any substance abuse services since entering the child welfare system (Waves 2-4). Data on average caseworker hours were collected once, twelve months after families entered the child welfare system (Wave 2). Caregiver service receipt was measured across multiple waves to account for the amount of time often required for caseworkers to facilitate families' access to necessary social and behavioral health services.

Permanent caregivers' receipt of mental health services was set equal to 1 if caregivers reported receiving outpatient counseling or therapy; day treatment or partial hospitalization; or family counseling; or if caseworkers indicated that permanent caregiver received mental health services as a result of referral by the child welfare agency. Permanent caregivers' receipt of substance abuse was also based on both permanent caregivers' and caseworkers' reports of whether any services were received. The rationale for including both permanent caregiver and caseworker responses was to account for the possibility that caregivers might under-report services and caseworkers might not be fully aware of the extent of caregiver service utilization.

Performance-based contracting and caseworker role overload. A measure of performance-based contracting was based on the child welfare agency director's report of whether the agency used performance-based measures linked to financial incentives or sanctions. This information was collected only once, at baseline (Wave 1).

Caseworker role overload was measured using a validated Likert scale ($\alpha = .82$) based on caseworker responses to eight perceptual items about the demands within their work environment (James & Sells, 1981; Rizzo, House, & Lirtzman, 1970). These questions were asked of the caseworkers providing services to families and were collected once, in Wave 2. Caseworkers were assessed to have high role overload if their value for role overload was at the mean or higher; values lower than the mean were assessed as low role overload.

Given that the coefficients of interaction terms within nonlinear models do not accurately represent the overall interaction effects and are therefore difficult to interpret (Ai & Norton, 2003; Norton, Wang, & Ai, 2004), we chose an alternative approach. To test the moderating effect of role overload upon the relationship between use of performance-based contracting and service outcomes, we created two dichotomous variables. The first variable was set =1 if the child welfare agency used performance-based contracting and the caseworker reported high role overload. The second variable was set =1 if the child welfare agency used performance-based contracting and the caseworker reported low role overload. Inclusion of these two dichotomous variables allows for the examination of the effect of performance-based contracting with varying levels of caseworker role overload relative to situations where performance-based contracting is not used.

Other covariates. Two agency-level control variables were included to account for potential confounders of the associations between focal predictors and service provision. The first variable, drawn from 2000 Area Resource File, indicated whether the agency was located within a non-metropolitan statistical area, and served as a control for rural-urban differences in service provision and as a proxy for organizational size (Alexander, Nank, & Stivers, 1999; Johnston & Romzek, 1999). The second variable was a control for local behavioral health provider availability. This variable was operationalized differently depending on the model. For all models except the one involving permanent caregiver receipt of substance abuse treatment, this variable was operationalized as the percentage of unmet mental health needs within the county, including those for providers with and without prescription authority (Thomas, et al., 2009). For the model involving permanent caregiver receipt of substance abuse treatment, data from the 2000 National Survey of Substance Abuse Treatment Services on the total number of behavioral health care facilities in the county, which was collected by the U.S. Department of Health and Human Services Substance Abuse and Mental Health Administration (SAMHSA) were utilized as a measure of local provider availability. This variable was log-transformed for the analyses to accommodate anticipated diminishing returns to scale.

Certain baseline factors known to influence families' interactions with the child welfare system were also added as controls. These factors are type of maltreatment, child gender, child age, whether the child was identified as having special needs, caregiver's relationship with the child, caregiver race, caregiver insurance, whether the caregiver had a behavioral health problem, and whether the child welfare case had closed since the initial investigation. Child special needs was operationalized as whether the child had chronic health problems and/or a clinical score (65 or above) on either the internalizing or externalizing scales of the Child Behavior Checklist (CBCL), a standardized instrument for assessing the presence of behavioral health problems in children (Achenbach & Edelbrock, 1983). Caregivers were assessed as having a behavioral health problem if the investigative caseworker assessed the permanent caregiver as having either mental health or substance abuse problems at baseline or if the caregiver was assessed as being depressed or substance dependent (i.e. alcohol and/or drug dependent) using the CIDI-SF (Kessler, et al., 1998;

Walters, et al., 2002). In the behavioral health models, which were restricted on this assessment of need, this variable was replaced by a measure of caregiver comorbidity, which indicated whether the caregiver had both mental health and substance abuse problems.

Analysis plan

NSCAW data have a hierarchical structure, with children, caregivers, and caseworkers nested within child welfare agencies. Consequently, we first used unconditional multilevel models (not shown) to examine the degree to which child welfare agency-level factors contributed to the total variance observed in each dependent variable. Results of the unconditional multilevel models indicated that for all of the count variables (caseworker time on case management and in-home service provision for families, and the number of supportive services received by permanent caregivers) there was not sufficient variance in outcomes ($ICC < 5\%$) due to agency-level factors to support the use of multilevel modeling. The remaining dependent variables were dichotomous, and while the ICC for these variables were $\geq 5\%$, the values were still relatively low (between 6-8%), suggesting that agency-level factors contributed only slightly to these service outcomes as well. In addition to the small amount of agency-level variance, the analytic sample contained a relatively modest number of level-2 units (54 child welfare agencies). With unbalanced data such as NSCAW, estimation of coefficients and standard errors in multilevel models rely on large-sample theory. Particularly with binary dependent variables, a small sample of level-2 units (< 100) can result in biased estimates premised on inaccurate assumptions about variable distributions (Raudenbush & Bryk, 2002). Given both the modest ICC and number of level-2 units, all models were analyzed as single-level models, adjusting for the potential clustering of caseworkers and permanent caregivers within child welfare agencies.

Analyses were conducted using the Stata 10.0 svy module (StataCorp, 2007). The svy module accounts for the complex survey design of the data, accommodating stratification, clustering of caregivers and their caseworkers within agencies, and probability weights. The link function used for each model reflected the nature of the dependent variable: negative binomial for the average hours per month the caseworker spent on case management and referrals or on in-home service provision, logistic for dichotomous variables such as caregiver receipt of mental health and substance

abuse services, and Poisson for the number of supportive services received by permanent caregivers.

Two separate sets of models were run. In the first set of models, performance-based contracting and caseworker role overload were included as separate covariates in order to identify the main effects of these variables upon each of the five dependent variables. In the second set of models, two dichotomous variables were used instead: (1) agency use of performance-based contracting when caseworkers reported high role overload and (2) agency use of performance-based contracting when caseworkers reported low role overload. Using these combined measures allowed for the examination of the moderating effect of high vs. low caseworker role overload upon associations between agency use of performance-based contracting and the identified outcomes.

Power calculations conducted using the Optimal Design software determined that in the models not restricted based on caregiver need for behavioral health services, there was sufficient power to detect a medium effect size (≥ 0.5) at a significance level (α) of 0.05 (Spybrook, Raudenbush, Liu, Congdon, & Martinez, 2008). For the models restricted based on caregiver need for behavioral health services, there was sufficient power to detect an effect size of 0.6 or higher. Finally, bivariate correlations among study variables, followed by tolerance checks for any correlations $> .4$, did not indicate any problematic collinearity.

This secondary data analysis was approved by the Institutional Review Board at the lead author's home institution. The original data collection was approved by an Institutional Review Board at RTI International.

Results

Table 1 provides descriptive statistics for all study measures. The mean time caseworkers reported spending on case management for a family each month was 5.26 hours and the mean time caseworkers spent each month on direct in-home service provision for a family was 7.74 hours. On average, permanent caregivers reported receiving only 1 out of 6 possible social services, with child care and referrals for job-related services (not shown) being the most common. Of the caregivers

assessed as needing such services at baseline (461 of 622 for mental health; 355 of 622 for substance abuse treatment), approximately 46% had received some mental health services and approximately 48% received substance abuse treatment since entering the child welfare system.

Approximately 25% of permanent caregivers were served by child welfare agencies that used performance-based contracting; at the agency level, 16 of the 54 (30%) child welfare agencies used performance-based contracting and the remainder did not. The mean level of role overload reported by caseworkers within the sample was 3.79 on a 1–5 scale. On average, 16% of families received services from child welfare agencies that used performance-based contracting and from a caseworker with high role overload; approximately 9% of families were served by child welfare agencies that used performance-based contracting and had a service caseworker with low role overload.

Tables 2–4 provides model results for the main effects of performance-based contracting and caseworker role overload respectively on caseworker hours spent in service provision, the number of supportive services received by permanent caregivers, and caregivers' likelihood of receiving behavioral health services. Tables 5-7 provide model results for the effect of performance-based contracting under conditions of high versus low caseworker role overload upon these variables. Results indicate that performance based contracting and caseworker role overload each have some negative associations with services to caregivers. Use of performance-based contracting was negatively associated with average caseworker hours spent on in-home service provision (IRR 0.58, $p < 0.01$) and with odds of mental health service receipt (OR=0.29, $p < 0.05$), holding caseworker role overload constant. Similarly, caseworkers with higher role overload reported spending less time on case management and referrals for caregivers, although the association was not significant at $\alpha = 0.05$ (IRR=0.75, $p < 0.10$).

The pattern of results becomes stronger when performance-based contracting is combined with caseworker role overload (Tables 5-7). The combination of performance-based contracting and caseworker high role overload decreased caseworker hours spent on case management and service referrals by a factor of 0.65, or by -35% ($p < 0.05$) and the number of supportive services received by caregivers by a factor of 0.62, or by -38% ($p < 0.01$). Similarly, the negative association between use of

performance-based contracting and caseworker hours on in-home service provision was stronger when the caseworker reported high role overload (IRR 0.49, $p < 0.01$) than when the caseworker reported low role overload (IRR 0.69, $p < 0.05$).

In contrast, the combination of performance-based contracting and low role overload increased caseworkers' hours spent in case management and service referrals by a factor of 1.43, or 43.1% ($p < 0.05$). This result represented the only significant positive association between performance-based contracting and service outcomes.

Discussion

This study investigated whether caseworker role overload moderated the relationship between performance-based contracting and service provision to families involved with child welfare agencies. This issue is important because currently, almost all performance-based contracts within child welfare focus on permanency, or the placement of children and youth into stable residences. However, contracts linked only to this outcome may cause caseworkers to pursue swift permanency placements by providing less intensive case management and/or pursuing permanency options that require less engagement with permanent caregivers. Evidence in the literature suggests that caseworkers perceive parent-child reunification as particularly time-consuming because it requires them to provide more services than other permanency options (McBeath & Meezan, 2010). Particularly when faced with pressure to quickly achieve permanency for a larger number of cases, caseworkers may choose to focus on other permanency options instead. For example, despite evidence that children placed with relatives take longer to reunify with parents, are less likely to be adopted, and receive fewer services and financial support than children placed with non-related caregivers (Cuddeback, 2004; McBeath & Meezan, 2010), kinship foster care has become an increasingly common placement option.

The current study findings were largely consistent with this logic: use of performance-based contracting in and of itself was associated with significantly fewer caseworker hours spent on in-home service provision to families, as well as significantly lower odds of caregivers receiving needed mental

health services. Both of these outcomes require caseworkers to spend a significant amount of time working with permanent caregivers; as suggested by the negative associations with these outcomes, child welfare agencies' use of performance-based contracting may cause caseworkers to de-prioritize such efforts.

Study findings also indicate that the consequences of performance-based contracting may depend on agency-level factors in ways that policymakers may not currently be taking into consideration. In this study, the combination of performance-based contracting and high caseworker role overload was associated with significantly fewer caseworker hours spent on case management. Under these conditions, caregivers also received fewer social services; while not statistically significant at the 5% level, results from the behavioral health models indicate that caregivers had lower odds of receiving substance abuse treatment as well. These findings suggest that when designing performance-based contracts, child welfare agencies should consider the potential effect of internal work conditions on the effectiveness of such contracts. Many caseworkers operate under severe time pressures and resource constraints, and may already seek ways to make their work more efficient by focusing primarily on outcomes for which they are held accountable (Jayaratne & Chess, 1984; B. Smith & Donovan, 2003). In situations in which caseworkers are overburdened, the use of performance-based contracts may provide incentives for them to focus their efforts on certain outcomes to the detriment of others. While the current study could not determine whether caseworkers experienced high role overload prior to the implementation of performance-based contracting, study findings suggest that the combination of the two is negatively associated with certain outcomes and should be monitored closely.

Policymakers and managers could help address this issue by re-structuring performance-based contracts to ensure that caseworkers are not focusing on permanence at the expense of other important means of supporting child well-being. More explicit emphasis on case management processes or on a broader range of outcomes might not address the ongoing issue of caseworker role overload, but could help reduce the risk that over-burdened staff will focus their efforts too narrowly. Including extra incentives for achievement of long-term placement stability rather than simply rewarding swift permanency placements could also be helpful.

Investment in supervisory training that emphasizes the importance of ensuring service provision to both biological parents and children could also help balance caseworker priorities. Evidence suggests that caseworkers do not transfer skills learned in training—e.g. taking a family-oriented approach—to the workplace when the work environment does not nurture such skills (Gregoire, Propp, & Poertner, 1998). Child welfare agency managers, and particularly frontline supervisors, play an important role in shaping caseworker priorities and practices (Gregoire, et al., 1998; Landsman, 2001; McBeath, Briggs, & Aisenberg, 2009; B. Smith, 2005). Supervisors trained to support their caseworkers in taking a more holistic approach could help mitigate the effects of role overload on caseworker practices.

Another possibility might be to adjust performance-based contracts to account for organizations' different work environments and/or service capacities. For example, administrators could design contracts that take into account child welfare agency caseloads and staffing ratios, or that adjust the expected timeframe for permanency placements based on the availability of local health and human services. Certainly the positive association between use of performance-based contracting and case management practices in our study when the caseworker reported low role overload suggest that performance-based contracting may accomplish desired results when these variables are accounted for.

One challenge in interpreting results derives from the lack of granularity of the measure of agencies' use of performance-based contracting. Child welfare agency directors were asked only whether their agency used these mechanisms; additional details about contract design were not available. Therefore, we did not know whether provision of permanent caregiver services was also included in the contract, or the size of the fiscal incentive or sanction provided. In addition, the nature of performance-based contracting may have changed since these data were collected. Given the growing use of such contracts within the U.S. child welfare system (e.g. Join Hands for Children, 2009), it will be important for future research to continue examining how different types of performance-based contracts affect outcomes under varying agency and contextual conditions.

Despite these limitations, our study is the first to examine associations between use of performance-based contracting, role overload – a key factor in the internal agency environment – and

service outcomes in child welfare. Our findings indicate that caseworker role overload may moderate associations between child welfare agencies' use of performance-based contracting and service outcomes for families. While there is a need for additional research in this area, policymakers and child welfare agency administrators may wish to consider modifying existing contracts to emphasize case management processes and family well-being outcomes, or at least to take into account current child welfare agency caseloads and staffing ratios.

Table 1. Descriptive Statistics (N=622)				
	Mean	Std Error	Min	Max
Dependent Variables				
<i>Average hours per month caseworker spent on services to family</i>				
Case management or referrals	5.26	7.69	0	80
In-home services	7.74	27.84	0	120
<i>Social services received by permanent caregivers</i>				
Number of social services	1.04	0.99	0	6
<i>Behavioral health services received by permanent caregivers [restricted on need]</i>				
Mental health services (N=461)	46%	--	0	1
Substance abuse treatment (N=355)	48%	--	0	1
Independent Variables				
Performance-based contracting (PBC)	25%	--	0	1
Caseworker role overload	3.79	0.75	1	5
PBC and high role overload (PBC=1 and role overload \geq 4)	16%	--	0	1
PBC and low role overload (PBC=1 and role overload <4)	9%	--	0	1
Control Variables				
Non-metro location	16%	--	0	1
Local provider availability: % unmet mental health need	21.24	12.49	0	63
Local provider availability: # of facilities	44.88	65.27	1	266
Maltreatment: physical	25%	--	0	1
Maltreatment: sexual	14%	--	0	1
Maltreatment: neglect and other abuse (referent)	61%	--	0	1
Child gender: male	50%	--	0	1
Child age (years)	5.57	4.77	0	16
Child has special needs	74%	--	0	1
Caregiver: father	7%	--	0	1
Caregiver: not father (referent)	93%	--	0	1
Caregiver race: black	25%	--	0	1
Caregiver race: hispanic	19%	--	0	1
Caregiver race: white and other race (referent)	56%	--	0	1
Caregiver insurance: private	25%	--	0	1
Caregiver insurance: self-pay	32%	--	0	1
Caregiver insurance: public (referent)	43%	--	0	1
Caregiver has a behavioral health problem	53%	--	0	1

Table 2. Model Results (PBC and Overload): Average hours per month caseworker spent providing services to family										
	Case management or referrals					In-home services				
	Negative Binomial					Negative Binomial				
	N=534					N=515				
	IRR	Std Err	P> t	95% CI		IRR	Std Err	P> t	95% CI	
Performance-based contracting (PBC)	0.88	0.15		0.62	1.23	0.58	0.11	**	0.40	0.84
Caseworker role overload	0.75	0.13	+	0.53	1.05	1.11	0.24		0.72	1.71
Non-metro location	1.17	0.22		0.81	1.70	1.39	0.38		0.81	2.39
Local provider availability	1.00	0.01		0.98	1.01	1.00	0.01		0.99	1.01
Type of maltreatment: Physical abuse	1.01	0.20		0.68	1.48	1.04	0.27		0.63	1.73
Type of maltreatment: Sexual abuse	1.02	0.26		0.62	1.68	0.65	0.18		0.38	1.13
Child is a male	1.05	0.21		0.71	1.55	0.93	0.20		0.61	1.43
Child age	1.02	0.02		0.98	1.06	1.07	0.02	**	1.02	1.11
Child has special needs	0.80	0.14		0.56	1.14	1.78	0.43	*	1.11	2.86
Caregiver is a father	0.91	0.38		0.40	2.08	1.21	0.49		0.54	2.71
Caregiver race: Black	0.90	0.16		0.63	1.28	1.79	0.47	*	1.06	3.01
Caregiver race: Hispanic	1.51	0.48		0.79	2.85	1.16	0.29		0.70	1.91
Caregiver insurance: Private	1.07	0.13		0.84	1.36	0.48	0.07	***	0.36	0.65
Caregiver insurance: Self-pay	1.69	0.31	**	1.17	2.44	1.02	0.26		0.62	1.68
Caregiver has a behavioral health problem	1.27	0.30		0.92	1.74	1.72	0.38	*	1.11	2.68
Alpha	1.24	0.13		1.01	1.52	1.88	0.26		1.43	2.49

+p<0.10 *p<0.05 **p<.01 ***p<.001

Table 3. Model Results (PBC and Overload): Social services received by caregiver					
	Number of supportive services				
	Poisson				
	N=557				
	IRR	Std Err	P> t	95% CI	
Performance-based contracting (PBC)	0.94	0.12		0.73	1.23
Caseworker role overload	0.95	0.08		0.80	1.13
Non-metro location	1.33	0.26		0.90	1.96
Local provider availability	1.00	0.05		0.99	1.01
Type of maltreatment: Physical abuse	0.69	0.12	*	0.49	0.98
Type of maltreatment: Sexual abuse	0.53	0.10	**	0.36	0.77
Child is a male	0.89	0.10		0.71	1.12
Child age	0.99	0.01		0.96	1.01
Child has special needs	1.41	0.23	*	1.01	1.96
Caregiver is a father	0.41	0.18	*	0.18	0.98
Caregiver race: Black	0.72	0.15		0.48	1.08
Caregiver race: Hispanic	0.84	0.17		0.56	1.26
Caregiver insurance: Private	0.82	0.16		0.56	1.20
Caregiver insurance: Self-pay	0.91	0.11		0.72	1.15
Caregiver has a behavioral health problem	1.16	0.18		0.86	1.57

+p<0.10 *p<0.05 **p<.01 ***p<.001

Table 4. Model Results (PBC and Overload): Caregiver receipt of needed behavioral health services										
	Mental health service receipt					Substance abuse treatment				
	Logistic					Logistic				
	N=239					N=140 (sexual abuse perfectly predicts failure and 3 obs dropped)				
	OR	Std Err	P> t	95% CI		OR	Std Err	P> t	95% CI	
Performance-based contracting (PBC)	0.29	0.16	*	0.10	0.84	0.71	0.36	0.25	1.97	
Caseworker role overload	1.18	0.41		0.60	2.34	1.23	0.43	0.61	2.48	
Non-metro location	1.46	0.85		0.46	4.64	6.90	8.09	0.67	70.96	
Local provider availability	1.00	0.02		0.97	1.03	2.01	0.39	**	1.36	2.96
Type of maltreatment: Physical abuse	1.85	0.98		0.65	5.29	3.68	2.72	+	0.85	16.02
Type of maltreatment: Sexual abuse	1.14	0.63		0.38	3.45	(dropped)				
Child is a male	1.38	0.48		0.69	2.74	0.32	0.20	+	0.09	1.08
Child age	1.06	0.05		0.95	1.17	0.83	0.05	**	0.73	0.95
Child has special needs	1.55	0.83		0.54	4.47	0.86	0.47		0.29	2.56
Caregiver is a father	0.60	0.47		0.13	2.82	1.98	2.42		0.17	22.42
Caregiver race: Black	0.30	0.16	*	0.11	0.87	0.76	0.51		0.20	2.91
Caregiver race: Hispanic	0.34	0.16	*	0.14	0.86	0.36	0.33		0.06	2.26
Caregiver insurance: Private	0.67	0.42		0.19	2.35	0.09	0.07	**	0.02	0.45
Caregiver insurance: Self-pay	0.43	0.28		0.12	1.55	0.81	0.52		0.23	2.87
Caregiver has a behavioral health problem	1.72	0.58		0.88	3.36	18.24	18.60	**	2.40	138.56

+p<0.10 *p<0.05 **p<.01 ***p<.001

Table 5. Model Results (PBC x Overload): Average hours per month caseworker spent providing services to family										
	Case management or referrals					In-home services				
	Negative Binomial					Negative Binomial				
	N=534					N=515				
	IRR	Std Err	P> t	95% CI		IRR	Std Err	P> t	95% CI	
PBC and high role overload	0.65	0.14	*	0.43	0.98	0.48	0.12	**	0.30	0.79
PBC and low role overload	1.43	0.23	*	1.04	1.96	0.69	0.13	*	0.47	1.01
Non-metro location	1.28	0.27		0.84	1.93	1.39	0.42		0.76	2.55
Local provider availability	1.00	0.01		0.99	1.01	1.00	0.01		0.98	1.01
Type of maltreatment: Physical abuse	1.02	0.20		0.69	1.49	0.97	0.27		0.56	1.69
Type of maltreatment: Sexual abuse	1.01	0.26		0.61	1.67	0.61	0.17		0.35	1.08
Child is a male	1.10	0.19		0.78	1.55	0.96	0.20		0.63	1.47
Child age	1.02	0.02		0.98	1.06	1.07	0.02	**	1.02	1.12
Child has special needs	0.81	0.15		0.56	1.18	1.79	0.42	*	1.12	2.86
Caregiver is a father	0.96	0.45		0.38	2.42	1.24	0.53		0.54	2.88
Caregiver race: Black	0.92	0.16		0.65	1.28	1.84	0.51	*	1.06	3.21
Caregiver race: Hispanic	1.55	0.51		0.80	2.98	1.20	0.30		0.73	1.98
Caregiver insurance: Private	1.11	0.14		0.86	1.44	0.47	0.07	***	0.34	0.64
Caregiver insurance: Self-pay	1.76	0.30	**	1.26	2.46	1.05	0.24		0.67	1.65
Caregiver has a behavioral health problem	1.19	0.20		0.86	1.66	1.77	0.45	*	1.06	2.94
alpha	1.23	0.13		1.00	1.53	1.88	0.28		1.40	2.53

+p<0.10 *p<0.05 **p<.01 ***p<.001

Table 6. Model Results (PBC x Overload): Social services received by caregiver					
	Number of supportive services				
	Poisson				
	N=557				
	IRR	Std Err	P> t	95% CI	
PBC and high role overload	0.62	0.09	**	0.46	0.84
PBC and low role overload	1.02	0.13		0.79	1.31
Non-metro location	1.34	0.25		0.92	1.94
Local provider availability	1.00	0.01		0.99	1.01
Type of maltreatment: Physical abuse	0.68	0.12	*	0.48	0.97
Type of maltreatment: Sexual abuse	0.53	0.10	**	0.36	0.77
Child is a male	0.88	0.10		0.71	1.09
Child age	0.99	0.01		0.97	1.01
Child has special needs	1.51	0.21	*	1.14	2.00
Caregiver is a father	0.40	0.17	*	0.17	0.93
Caregiver race: Black	0.71	0.15		0.47	1.08
Caregiver race: Hispanic	0.83	0.17		0.56	1.24
Caregiver insurance: Private	0.80	0.15		0.55	1.18
Caregiver insurance: Self-pay	0.92	0.11		0.72	1.17
Caregiver has a behavioral health problem	1.14	0.17		0.85	1.53

+p<0.10 *p<0.05 **p<.01 ***p<.001

Table 7. Model Results (PBC x Overload): Caregiver receipt of needed behavioral health services										
	Mental health service receipt					Substance abuse treatment				
	Logistic					Logistic				
	N=239					N=140 (sexual abuse perfectly predicts failure and 3 obs dropped)				
	OR	Std Err	P> t	95% CI		OR	Std Err	P> t	95% CI	
PBC and high role overload	0.45	0.21	+	0.18	1.12	0.09	0.12	+	0.01	1.40
PBC and low role overload	0.07	0.08	*	0.01	0.62	0.86	0.42		0.33	2.29
Non-metro location	1.28	0.79		0.38	4.35	6.68	7.90		0.64	70.18
Local provider availability	1.00	0.02		0.96	1.03	2.05	0.46	**	1.32	3.19
Type of maltreatment: Physical abuse	2.06	1.15		0.68	6.26	3.81	3.00	+	0.80	18.26
Type of maltreatment: Sexual abuse	1.28	0.77		0.39	4.22	(dropped)				
Child is a male	1.49	0.53		0.74	3.01	0.27	0.18	*	0.08	0.98
Child age	1.05	0.05		0.96	1.14	0.86	0.05	*	0.76	0.97
Child has special needs	1.23	0.64		0.43	3.48	0.63	0.32		0.23	1.73
Caregiver is a father	0.56	0.42		0.13	2.52	1.44	1.72		0.13	15.47
Caregiver race: Black	0.23	0.14	*	0.07	0.79	0.69	0.46		0.19	2.56
Caregiver race: Hispanic	0.29	0.15	*	0.10	0.83	0.28	0.26		0.04	1.82
Caregiver insurance: Private	0.73	0.48		0.20	2.67	0.11	0.10	*	0.02	0.63
Caregiver insurance: Self-pay	0.42	0.26		0.12	1.46	0.98	0.69		0.24	4.00
Caregiver has a behavioral health problem	1.99	0.67	*	1.02	3.87	12.95	9.19	**	1.48	55.15

+p<0.10 *p<0.05 **p<.01 ***p<.001

CHAPTER IV: INTERAGENCY COLLABORATION AND BEHAVIORAL HEALTH SERVICES FOR YOUTH INVOLVED WITH CHILD WELFARE AND JUVENILE JUSTICE

There is significant overlap in the population of youth served by the child welfare and juvenile justice systems (Malmgren & Meisel, 2004; Polivka & Clark, 1994). Children who have been abused and/or neglected are at elevated risk of becoming delinquent (Thornberry, et al., 2004; Widom, 1989; Wiig & Widom, 2003), and many youth in the juvenile justice system wind up entering the foster care system as well. “Crossover youth,” or youth involved with both the child welfare and juvenile justice systems, are particularly at risk for future engagement with the criminal justice system. Although the overall percentage of crossover youth within the juvenile justice system is small (Tjaden & Thoennes, 1992), these youth remain longer in the juvenile justice system and are more likely to recidivate than those not involved with child welfare (Halemba, Siegel, Lord, & Zawacki, 2004; Morris & Freundlich, 2004; Ryan, Herz, Hernandez, & Marshall, 2007).

Provision of behavioral health and social services such as housing or mentorship programs increases the likelihood that youth involved with the child welfare and/or juvenile justice systems will successfully transition back to school, work, and the community (Baltodano, Mathur, & Rutherford, 2005; Glascoe, 2000; Jonson-Reid & Barth, 2000; Pullmann, et al., 2006). Behavioral health services are considered particularly important for crossover youth. Prevalence estimates indicate that between 40-86% of the youth involved with either child welfare or juvenile justice are seriously emotionally disturbed (Barnes, et al., 2005; Burns, et al., 2004; Cocozza & Skowrya, 2000; Leslie, et al., 2005). Youth with untreated behavioral problems are at higher risk of future delinquency, making the social consequences of unmet service need very high (Coleman & Jenson, 2000; Jonson-Reid, 2002; Kortenkamp & Ehrle, 2002; Vander Stoep, Evens, & Taub, 1997).

Unfortunately, only a small percentage of youth in the child welfare and juvenile justice systems who need behavioral health services receive them (Burns, et al., 2004; SAMHSA, 2008).

Research shows that referral rates from child welfare and juvenile justice to behavioral health treatment are significantly lower than even conservative estimates of need and that unmet service need is particularly high for crossover youth (Breda, 2001; Glisson, 1996). Part of the problem is that these children and youth are involved with multiple agencies. Ensuring service receipt for this population requires that service delivery be coordinated between the different agencies with which they are involved (Darlington, Feeney, & Rixon, 2005; Greenbaum, et al., 1996; Howell, et al., 2004).

Coordination between agencies is challenging (Darlington, et al., 2005; Ross, 2009; Stiffman, Chen, Elze, Dore, & Cheng, 1997). Staff in child welfare and juvenile justice agencies face many barriers to cooperation, including different organizational priorities, confusion over how services should be funded and who has jurisdiction over the youth, and difficulty in tracking cases across organizations (Conger & Ross, 2006; Ryan, et al., 2007; Sedlak, et al., 2006).

Human services research suggests that interagency collaboration, a process involving the exchange of information and/or resources between agencies, can help agencies ensure that youth involved with multiple sectors receive necessary services (Colby & Murrell, 1998; Hurlburt, et al., 2004). Cottrell, Lucey, Porter, et al. (2000) found that a multifaceted collaborative initiative between child welfare and mental health agencies resulted in faster access to mental health for children and adolescents involved with both systems. Bai, Wells, & Hillemeier (2009) found that a greater number of inter-organizational arrangements between child welfare and mental health agencies was associated with improved children's mental health outcomes.

Evidence also suggests that the courts can play an important role in facilitating access to behavioral health services for families involved with the child welfare system (Fedoravicius, et al., 2008; Rittner, 2000). However, while a number of collaborative efforts between child welfare and juvenile justice agencies have been attempted (Kamradt, 2000; Ross, 2009), there is currently only limited empirical evidence as to whether collaboration can help agencies facilitate service access for crossover youth.

The current study contributes to the literature by using a national dataset of children involved with the child welfare system to examine how interagency collaboration between child welfare and juvenile justice agencies is associated with the likelihood that crossover youth receive necessary

behavioral health services. Consistent with literature suggesting that collaboration is a multidimensional construct (Gray, 2000; Thomson, Perry, & Miller, 2007), this study examined associations between three different dimensions of collaboration and youths' service receipt. Specific dimensions of collaboration examined were: (a) jurisdiction, or the establishment of decision-making structures regarding agencies' responsibilities for dually involved youth; (b) shared information systems, which are the operating systems through which collaborative efforts can be implemented; and (c) overall connectivity, the number of different ways that agencies work together.

Jurisdiction

Jurisdiction is an important dimension of collaboration because it involves the development of rules about who is eligible to make decisions, which actions are allowed or constrained, and what information needs to be provided (Ostrom, 1990). Clarifying agency accountability is particularly important for crossover youth. Although a few states end child welfare involvement once youth enter the juvenile justice system, the majority of states allow for concurrent jurisdiction (Herz, Krinsky, & Ryan, 2006). Child welfare and juvenile justice agencies with concurrent jurisdiction can experience tensions related to appropriate roles and responsibilities and differing organizational timelines that make each reluctant to assume primary responsibility for crossover youth (Bilchik & Stagner, 2009; Ross, 2009; Ryan, et al., 2007). Consequently, when accountability for youth has not been clearly established, youth may be less likely to receive necessary services (Ross, 2009). For example, Conger & Ross (2006) found that communication gaps between agency staff meant that crossover youth were more at risk of losing foster care and behavioral health service placements than youth not involved with child welfare. Designating a single agency as accountable for these youth could help address this issue and was therefore hypothesized to increase crossover youths' odds of receiving necessary behavioral health services.

Shared information systems

Shared information systems allow participating agencies to communicate and monitor each others' activities in relation to their respective roles and responsibilities (Bardach, 1998; Thomson, et

al., 2007). This dimension of collaboration is important because research has demonstrated that discrepant information-gathering procedures and administrative databases across agencies can leave staff unaware of youths' involvement with other agencies (Sedlak, et al., 2006; Young, Boles, & Otero, 2007). In recent years, concern over the difficulty of tracking cases between incompatible organizational filing systems have led some agencies to develop multi-sector administrative databases (Jonson-Reid & Barth, 2000; Sedlak, et al., 2006). A linked database could reduce the time and effort required to successfully track a case among different organizations, increase staff awareness of whether youth have actually received necessary services, and subsequently facilitate coordinated service delivery. In the current study, shared information systems, and specifically greater sharing of administrative data between the child welfare and juvenile justice system, was hypothesized to increase crossover youths' odds of receiving behavioral health services.

Connectivity

Many child welfare and juvenile justice agencies have established a number of different types of inter-organizational arrangements such as joint decision-making, cross-training of staff, or joint budgeting (Hunter, 2003). These arrangements are all expected to help agencies facilitate service access for crossover youth. For example, joint decision-making could raise staff awareness of services that youth are receiving at other agencies (Hunter, 2003; Kamradt, 2000). Cross-training might make staff more cognizant of other agencies' perspectives and priorities and also build positive relationships between staff (Altshuler, 2003; Drabble, 2007). Joint budgeting could help address agency concerns over how services will be funded and reduce "turf wars" around funding streams (Goldstrom, Jaiquan, Henderson, Male, & Manderscheid, 2001). Social network research suggests that having a number of different inter-organizational arrangements is reflective of stronger overall collaboration between agencies (Granovetter, 1973; Ibarra, 1995); agencies with these connections interact in a variety of ways and subsequently develop more trusting and reliable relationships. Greater connectivity, also referred to in the social networks literature as multiplexity, between agencies has been positively associated with service outcomes in other sectors (Brass, Butterfield, &

Skaggs, 1998; Granovetter, 1973; Ibarra, 1993), and was hypothesized to positively influence crossover youths' odds of receiving necessary behavioral health services as well.

Methods

Data and Sample

Data on youths' behavioral health service receipt were drawn from the Child Protective Services (CPS) cohort of the National Survey of Child and Adolescent Well-Being (NSCAW), the only national study of children in the U.S. child welfare system (Dowd et al., 2004). NSCAW was funded by the Administration for Children and Families within the U.S. Department of Health and Human Services and was carried out by Research Triangle Institute (RTI) International. A complex sampling design involving two stages of stratification was employed. The first level was comprised of eight strata each representing a large state plus a ninth stratum of 28 additional states. Across all nine strata, a total of 92 county CPS agencies were the primary sampling units from which children were sampled. The initial NSCAW Child Protective Services cohort included 4,080 children and youth who were referred and investigated for maltreatment between October 1999 and December 2000 and subsequently received any services – including case management, family support, and/or social services – from the child welfare agency.

Assessments of child context and well-being were conducted through interviews with each child, his or her current caregiver, and the child welfare caseworker at baseline (Wave 1, with interviews conducted between October 1999 and December 2000), 12 months (Wave 2), 18 months (Wave 3), and 36 months (Wave 4) after becoming involved with the child welfare system. A subsequent fifth wave was collected at 48 months, but these data were omitted from the current analyses because of the significantly higher attrition in response rates as youth within the sample emancipated.

Current caregivers, whether permanent or foster, were asked about children's service receipt in all four waves. Directors of 86 of the 92 child welfare agencies in the NSCAW sample were interviewed at baseline (Wave 1) about agency management practices and policy contexts, including the existence of formal, collaborative agreements with other agencies such as juvenile justice. Data

on agency accountability for crossover youth were obtained from the NSCAW-affiliated Caring for Children in Child Welfare (CCCW) study, a telephone-administered key informant interview of NSCAW contact persons in 89 of the 92 child welfare agencies (Kolko, Herschell, Costello, & Kolko, 2009). Using an identical sampling frame as that of NSCAW, and fielded between 2000 and 2001, CCCW identified key informants within each county, who provided detailed information regarding the organization of child welfare agency services. Additional details regarding the design and fielding of CCCW are available elsewhere (e.g. Libby, et al., 2007).

Information on the extent of data sharing between the child welfare and juvenile justice data systems was obtained from the Child Welfare League of America National Data Analysis System (NDAS). Contextual information on local provider availability and child welfare agencies' urban-rural location was obtained from the 2000 Area Resource File (ARF), the National Survey of Substance Abuse Treatment Services (NSSATS), and data on county-level mental health shortages (Thomas, et al., 2009). These data were merged with NSCAW data using county-level identifiers by RTI International upon request.

Given the study's focus on how collaboration between child welfare and juvenile justice systems was associated with behavioral health service receipt, the study sample was restricted to children and youth who (1) needed behavioral health services, and (2) were considered at high risk for involvement with the juvenile justice system. Only individuals aged six years or older at baseline were included in this categorization, to account for children who would be eligible for juvenile justice involvement by Wave 4, or 36 months after initial child welfare involvement. Application of these inclusion criteria yielded a sample of 407 youth within 75 agencies.

Of these 407 youth, 330 were located in child welfare agencies in which directors were interviewed about agency management practices. Additional information about data sharing and child welfare agency accountability was available for 219 of these 330 cases. Listwise deletion for item missingness resulted in a final analytic sample of 178 youth located in 51 agencies for models predicting mental health service receipt, and 173 youth located in 51 agencies for models predicting substance abuse treatment.

In an effort to maintain the full sample size, multiple imputation was attempted using the IVEware module within the SAS statistical software (Raghunathan, Solenberger, & Hoewyk, 2002). However, high imputation-to-imputation variance in estimated values for the collaboration variables indicated an inability to impute values for those variables reliably, despite incorporation of extensive agency-level data in the information matrix. Therefore, unimputed data were used in the regression analyses.

The sampling weights within NSCAW incorporate differential selection probabilities as well as potential bias resulting from survey non-response and thus should yield nationally representative estimates (Dowd, et al., 2004; Little, 1988). However, these weights do not account for item non-response. Weighted t-tests conducted to determine if data were missing at random indicated that youth in the final analytic sample differed from those excluded due to listwise deletion in other model variables in only two areas: being sexually abused (21% of the final analytic sample vs. 8% of the excluded cases, p-value for t-test <0.01); and being out-of-home at baseline (31% of the analytic sample vs. 13% of the excluded cases, p-value for t-test <0.01). Although these differences suggest that youth in the analytic sample might be more at-risk for behavioral health problems than those excluded (e.g. Aarons, et al., 2010; Cavaiola & Schiff, 1988), the weighted t-tests did not indicate significant differences on measures of substance abuse risk or mental health need.

Measures

Need for behavioral health services. Youth were assessed as needing behavioral health services if they met any of the following criteria: (1) a clinical Child Behavior Checklist score (≥ 64 on either the internalizing or externalizing behavior scales) (Achenbach & Edelbrock, 1983); (2) the services caseworker indicated the youth had a drug or alcohol abuse problem; or (3) youth self-report of drug or alcohol use indicated medium to high risk of a substance abuse problem. Youth risk for a substance abuse problem was assessed using an ordinal measure developed by Richard Barth's NSCAW Research Group at the UNC School of Social Work and based on the gateway model of adolescent substance abuse (Wagner & Anthony, 2002). In this measure, youth responses about the frequency of substance use were multiplied by the risk level of each substance and then used to

generate a total score of substance abuse risk, with 0 indicating no risk, 1 for low risk, 2 for medium risk, and 3 indicating high risk (Wall & Kohl, 2007).

Risk of involvement with juvenile justice. Youth were considered at high risk of involvement with the juvenile justice system if the current caregiver reported that the youth had gone to court for misbehaving – including delinquency, running away, truancy, or other offenses – in any wave, or if the youth reported participating in any delinquent or criminal activities (Elliott & Ageton, 1980).

Receipt of behavioral health services. Behavioral health service receipt was measured using four variables drawn from an adapted version of the Child and Adolescent Services Assessment (CASA) (Ascher, Farmer, Burns, & Angold, 1996). These variables are based on current caregivers' – either biological parents or foster caregivers – report of whether the youth received (1) outpatient mental health, defined as attendance at a day treatment program, a mental health or community health center, or receipt of services from private professionals such as a psychiatrist, psychologist, social worker, or psychiatric nurse for a behavioral health problem; (2) inpatient mental health services, defined as receiving treatment at a psychiatric hospital, a psych unit within a hospital, or a hospital medical inpatient unit for a behavioral health problem; (3) outpatient substance abuse treatment, or attendance at a day treatment program or outpatient drug and alcohol clinic for behavioral health problems; and (4) inpatient substance abuse treatment, defined as receiving treatment from a detoxification unit, an inpatient drug or alcohol unit, or a hospital medical inpatient unit for a behavioral health problem.

Collaboration between child welfare and juvenile justice. Three dimensions of collaboration between child welfare and juvenile justice agencies – jurisdiction, shared information systems, and connectivity – were measured.

Jurisdiction was operationalized as the designation of agency accountability and was measured using two dummy variables based on child welfare administrators' report of whether care for crossover youth was under joint child welfare-juvenile justice control (referent group), child welfare control, or juvenile justice control.

Given the importance of administrative databases to child welfare and juvenile justice agencies, shared information systems was operationalized as the extent to which local child welfare and juvenile justice agencies could access each other's databases. This variable was set to 0 if the child welfare and juvenile justice had separate data systems with no cross-referencing, 1 if they had separate data systems with cross-referencing, and 2 if they had the same data system.

Finally, consistent with measures utilized in previous studies (Bai, et al., 2009; Hurlburt, et al., 2004), connectivity was measured as the number of ties connecting the local child welfare and juvenile justice agencies. This number was based on local child welfare agency directors' reports of whether their agency had the following ties with juvenile justice agencies: discussion and information sharing; development of inter-agency agreements and memoranda of understanding; joint planning or policy formulation for service delivery; cross-training of staff; and joint budgeting or resource allocation.

Control variables. Two agency-level control variables for local service context were included to account for potential confounders of the associations between focal predictors and likelihood of behavioral health service receipt. A dichotomous measure derived from 2000 Area Resource File data indicated whether the agency was located within a non-metropolitan statistical area, and served as a control for rural-urban differences in service provision and as a proxy for organizational size (Beale, 2003). The second variable was used to control for local behavioral health provider availability. For models predicting mental health service receipt, this variable was operationalized as the percentage of unmet mental health need within the county, including that for providers with and without prescription authority (Thomas, et al., 2009). While not specific to pediatric providers, this measure does provide an overall indication of potential provider availability within each county. For models predicting substance abuse treatment, the 2000 National Survey of Substance Abuse Treatment Services data were utilized to create a measure of the number of behavioral health providers within the county. This variable was log-transformed in the analyses to accommodate anticipated diminishing returns to scale.

In addition, certain baseline factors known to influence youths' likelihood of receiving behavioral health services and/or involvement with child welfare and juvenile justice were also added

as control variables. These factors are: a court order that the youth receive services, which could give youth priority for openings in behavioral health facilities (Rittner, 2000); a mental health or substance use comorbidity, operationalized as including youth with both a clinical CBCL score and a substance abuse problem (Blumberg, Landsverk, Ellis-MacLeod, Ganger, & Culver, 1996; Greenbaum, et al., 1996); sexual abuse (Bagley, Wood, & Wood, 1994; Beitchman, et al., 1992); out-of-home placement (Conger & Ross, 2006; Courtney, 2000b); youth gender (Graves, Frabutt, & Shelton, 2007); age (Burns, et al., 1995); African American race or Hispanic ethnicity (Courtney, et al., 1996); and youth health insurance (Glied, Hoven, Moore, Garrett, & Regier, 1997).

Analyses

NSCAW data have a hierarchical structure, with children, caregivers, and caseworkers nested within child welfare agencies. Consequently, unconditional multilevel models (not shown) were used to examine the degree to which child welfare agency-level factors contributed to the total variance observed in each dependent variable. Results of the unconditional multilevel models indicated that for all of the variables measuring behavioral health service receipt there was a low amount of variance in outcomes due to agency-level factors (2%-6%). In addition, the analytic sample contained a relatively modest number of level-2 units (51 child welfare agencies). With unbalanced data such as NSCAW, estimation of coefficients and standard errors in multilevel models rely on large-sample theory. Particularly with binary dependent variables, a small sample of level-2 units can result in biased estimates premised on inaccurate assumptions about variable distributions (Raudenbush & Bryk, 2002). Given both the modest ICCs and number of level-2 units, all models were therefore analyzed as single-level models, including a post-hoc adjustment to standard errors that accommodated clustering of youth within child welfare agencies (DeLeeuw & Meijer, 2008).

All analyses were conducted using the Stata 10.0 `-svy-` module (StataCorp, 2007). The `-svy-` module permits analysis that accounts for the complex survey design of the data, accommodating probability weights and stratification as well as correlations in outcomes across youth located within the same child welfare agencies. The post-hoc adjustment to standard errors utilized within the `-svy-` module is similar to that used by the robust standard error procedure, differing only by a constant

multiplier (DeLeeuw & Meijer, 2008; StataCorp, 2005). Reflecting the dichotomous nature of the dependent variables, the logistic link function was used in all four models.

Power calculations conducted using the Optimal Design software determined that for all key independent variables there was sufficient power to detect a medium effect size (0.5) at a significance level (α) of 0.05 (Spybrook, et al., 2008).

Phi tests of bivariate correlation (not shown) did not indicate any problematic collinearity among independent variables within the four analytic models (no correlations $>.4$). However, there was moderate overlap in the dependent variables related to youth receipt of different types of behavioral health service receipt. Additional models (not shown) were run to determine whether receipt of one type of behavioral health service was associated with youths' likelihood of receiving other such services. Results of these models indicated that youth receiving one type of behavioral health service were more likely to receive a different type of service of the same intensity (e.g. youth receiving outpatient mental health were more likely to receive outpatient substance abuse and vice versa; youth receiving inpatient mental health were more likely to receive inpatient substance abuse treatment, and vice versa). However, receipt of other types of services was non-significant. As the final analytic models include a control variable for youth co-morbidity (i.e. need for both mental health and substance abuse services), we concluded that omitting a control variable for youths' receipt of other types of services would not bias model results.

This secondary data analysis was approved by the Institutional Review Board at the lead author's home institution. The original data collection was approved by an Institutional Review Board at RTI International.

Results

Table 5 provides weighted descriptive statistics for all study measures. Of the children and youth assessed as needing behavioral health services and as being high risk for involvement with juvenile justice, approximately 79% received outpatient mental health services, 33% received inpatient mental health services, 14% received outpatient substance abuse treatment, and 13% received inpatient substance abuse treatment within three years of entering the child welfare system.

Child welfare agencies were exclusively accountable for the care of approximately 36% of crossover youth; juvenile justice agencies were accountable for 42%; and 22% of youth were under joint child welfare – juvenile justice control. Approximately 20% of child welfare agencies shared at least some administrative data with juvenile justice. On average, child welfare agencies reported having 3.6 of 5 possible different inter-organizational arrangements with local juvenile justice agencies.

Multiple regression results are shown in Tables 6 and 7. Compared to youth under concurrent child welfare-juvenile justice jurisdiction, youth whose care was under child welfare control had higher odds of receiving outpatient behavioral health services (OR 3.09, $p < 0.05$ for outpatient mental health; OR 6.07, $p < 0.05$ for outpatient substance abuse treatment). In the model predicting youth receipt of inpatient substance abuse treatment, joint child welfare-juvenile justice control was a perfect predictor of youths' failure to receive services; consequently, the relative odds of youth under child welfare or juvenile justice control receiving such services was estimated as positive infinity. An additional model (not shown) run to identify differences between child welfare control (referent group) and juvenile justice control with regards to youths' odds of receiving inpatient substance abuse treatment found that youth under juvenile justice control had higher odds of inpatient substance abuse treatment than youth under child welfare control (OR 5.39, $p < 0.05$).

Greater sharing of administrative data between local child welfare and juvenile justice agencies was not significantly associated with youth odds of receiving outpatient behavioral health services. However, administrative data sharing was positively associated with youths' odds of receiving both inpatient mental health services (OR 3.55, $p < 0.01$) and inpatient substance abuse treatment (OR 3.30, $p < 0.01$).

The total number of different arrangements between child welfare and juvenile justice agencies was not significantly associated with any type of service receipt ($p > 0.05$), indicating that multiplex relationships were not generally associated with crossover youths' odds of receiving behavioral health services. Additional models (not shown) run to test for the possibility that specific types of inter-organizational arrangements would have more impact than the total number of ties also found non-significant associations with youth receipt of behavioral health services.

Several control variables were also significantly associated with youths' odds of receiving behavioral health services. A court order for youth to receive services increased youth's odds of receiving outpatient mental health services (OR 23.17, $p < 0.001$) and inpatient substance abuse treatment (OR 5.72, $p < 0.01$). Co-morbidity for both a mental health and substance abuse treatment problem reduced crossover youth's odds of receiving outpatient mental health treatment (OR 0.14, $p < 0.05$) but significantly increased youth odds of receiving both outpatient and inpatient substance abuse treatment (OR 13.93, $p < 0.05$; OR 38.97, $p < 0.05$). Having either private insurance or being self-pay (i.e. no insurance) was negatively associated with youths' odds of receiving inpatient behavioral health services, relative to having Medicaid or other public insurance.

Discussion

As hypothesized, both designation of single agency accountability and sharing of administrative data were significantly associated with youths' odds of receiving necessary behavioral health services. Crossover youth were significantly more likely to receive both outpatient and inpatient behavioral health services when their care was under single agency control. These findings are consistent with literature suggesting that clarifying agency staff responsibility for youths' care may have an important impact on service outcomes (Siegel & Lord, 2005). Designating a single agency as accountable for crossover youths' care may facilitate the development of a single, coordinated case plan. Staff at the accountable agency may also be more likely to follow up and determine whether youth are receiving necessary services.

The differential findings related to child welfare vs. juvenile justice control were more surprising. Youth whose care was under child welfare agency control had significantly higher odds of receiving outpatient behavioral health services, while youth under juvenile justice control had higher odds of receiving inpatient substance abuse treatment. There are two possible interpretations for the differential findings related to child welfare vs. juvenile justice control. First, in some regions, dual jurisdiction is not permitted by law and the local child welfare and juvenile justice agencies must recommend to the court which status, dependency or delinquency, is in the best interests of the minor and society (Nash & Bilchik, 2009). In these situations, it is likely that the most seriously disturbed

youth – who are also those most likely to need inpatient substance abuse treatment rather than outpatient – will be placed under juvenile justice control rather than child welfare. While the current study did incorporate indicators of youth service need and co-morbidity, the NSCAW data did not include an in-depth evaluation of youths' need for outpatient vs. inpatient treatment. Therefore, it is possible the differential findings related to child welfare vs. juvenile justice responsibility are reflective of youths' different service needs.

Another possible explanation for the difference in findings related to child welfare vs. juvenile control for crossover youths' care is that there are differences between child welfare and juvenile justice agencies that influence youths' odds of receiving services independent of need. The agency in the system the youth entered first often obtains primary responsibility for youths' care. Prior research suggests that youths' behavioral service experiences vary depending on whether their care is under child welfare or juvenile justice control. These variations exist even after controlling for youth attributes and have been attributed to the different philosophies underpinning each system. For example, while juvenile court judges often believe that behavioral health services have value and may support rehabilitation (Breda, 2001; Schwartz, 1989), their focus is generally on correcting the behavior directly responsible for youths' entry into the corrections system rather than long-term resolution of underlying behavioral health problems (Heggeness & Davis, 2010). In our current sample, this tendency could have been manifested as juvenile justice agencies being more likely to place youth in short-term inpatient substance abuse treatment, such as a detox unit, rather than in longer-term outpatient services. Additional research is needed that more closely examines why crossover youths' service experiences in different systems vary and how these differences may impact youths' long-term outcomes.

The current study's findings related to sharing of administrative data were to some extent consistent with prior evidence suggesting that shared information systems can improve service coordination (Sedlak, et al., 2006; Thomson, et al., 2007; Young, et al., 2007). We found strong, positive associations between child welfare and juvenile justice agencies' sharing of administrative data and youths' odds of receiving inpatient behavioral health services. Associations between agency sharing of administrative data and youth receipt of outpatient services were also positive but not

statistically significant. Research has shown that crossover youth require a more intense array of services and supports than youth involved with only one system (e.g. Herz & Ryan, 2008). Many of these youth are seriously emotionally disturbed; therefore, the significant associations between agency sharing of administrative data and youth receipt of inpatient services may be reflective of actual youth service needs. However, it is also possible that staff aware of youths' involvement with other agencies may perceive such youth as more high-risk and subsequently be more likely to place them in inpatient services. Previous studies have found that agency staff perceive crossover youth as "higher risk," and that this perception can influence both the processing of youths' cases and their subsequent placements (Morris & Freundlich, 2004; Ross, 2009). For example, Ryan et al. (2007) found that even after controlling for youth attributes such as age, gender, race, and type of offense, crossover youth were significantly less likely to receive probation than delinquent youth not involved with child welfare. Such perceptions and the tendency to keep these youth in detention could influence the types of behavioral health services crossover youth receive more than any actual differences in service need.

Contrary to prior research examining inter-organizational relationships between child welfare and other types of agencies (e.g. Bai, et al., 2009; Hurlburt, et al., 2004), the current study did not find significant associations between child welfare and juvenile justice connectivity and crossover youths' odds of receiving necessary behavioral health services. Previous studies that have found significant associations between interagency collaboration and youth behavioral health service receipt have focused on inter-organizational arrangements between child welfare and behavioral health providers (e.g. Cottrell, et al., 2000), not between child welfare and juvenile justice agencies. Therefore, this finding could reflect a genuine lack of association with youth behavioral health service receipt.

However, it is also possible that the measure of connectivity used within this study did not accurately capture the extent to which agency staff participated in these inter-organizational arrangements. Network analysis has demonstrated that cooperative relationships between child welfare and juvenile justice agencies tend to develop incrementally over time (Rivard, Johnsen, Morrissey, & Starrett, 1999). Child welfare agency director reports of the presence of such ties may not capture the strength of personal relationships between staff or the amount of day-to-day

communications that actually occurred. In support of this possibility, a recent study examining collaboration between child welfare and substance abuse treatment agencies found significant within-agency variation in the amount of interagency collaboration reported by frontline staff, meaning that certain workers within each agency were more likely to engage in interagency collaboration than others (B. Smith & Mogro-Wilson, 2007); the study also found that administrators' reports of collaborative practices did not align with those reported by frontline staff. Future research examining how and when different types of inter-organizational arrangements between staff at child welfare and juvenile justice agencies influence youth service receipt could clarify this issue.

Limitations

There were a number of limitations to this study that must be considered in the interpretation of results. First, the analytic sample over-represented youth who were sexually abused as well as those placed out-of-home. These two youth attributes are risk factors for behavioral health problems (Aarons, et al., 2010); although weighted t-tests did not indicate significant differences in youth behavioral health needs, it is possible that the over-representation of sexually abused and out-of-home youth influenced the generality of these results to the overall population of crossover youth. Second, the NSCAW data only measured whether youth received services, not their duration, intensity, or appropriateness. The questions about youth behavioral health services also did not specify modality, which previous research has shown to predict treatment outcomes (Chamberlain, Leve, & DeGarmo, 2007; Fisher & Chamberlain, 2000; Henggeler, Clingempeel, Brondino, & Pickrel, 2002; Henggeler, Melton, & Smith, 1992). In addition, if the effect size of any particular facet of collaboration – such as the total number of inter-organizational arrangements – was small, then the current study lacked statistical power to detect the association. Finally, data on child welfare and juvenile justice agency collaboration were collected only once, at baseline. The cross-sectional nature of the data did not permit a more in-depth examination of collaboration and how it may have evolved over time.

Conclusion

This study is one of the first to examine empirically the influence of interagency collaboration between child welfare and juvenile justice agencies on crossover youths' odds of receiving necessary behavioral health services. The current study found that designating a single agency as responsible for youths' care and linking administrative databases were associated with youth odds of receiving behavioral health services. These findings suggest that jurisdiction and shared information systems are important dimensions of interagency collaboration. These two dimensions of collaboration are currently under-examined in the empirical literature. Future efforts to improve service coordination for youth involved with multiple sectors could benefit from additional attention to agency accountability and operating systems.

Table 8. Descriptive Statistics (N=178 youth within 51 agencies)

	Weighted Mean	Std Error	Min	Max
<i>Behavioral health service receipt</i>				
Outpatient mental health	78%	--	0	1
Inpatient mental health	33%	--	0	1
Outpatient substance abuse	14%	--	0	1
Inpatient substance abuse	13%	--	0	1
<i>Collaboration between child welfare and juvenile justice</i>				
Jurisdiction: joint control (referent)	22%	--	0	1
Jurisdiction: child welfare only	36%	--	0	1
Jurisdiction: juvenile justice only	42%	--	0	1
Information systems: extent of data sharing	0.21	0.53	0	2
Connectivity: number of inter-agency ties	3.63	0.25	0	5
<i>Control variables</i>				
Non-metropolitan location	21%	--	0	1
Local provider availability: % unmet mental health need	22.30	2.36	0	63
Local provider availability: # of behavioral health facilities	19.91	4.11	1	266
Court ordered services	34%	--	0	1
Comorbidity: substance abuse problem	61%	--	0	1
Comorbidity: mental health problem	75%	--	0	1
Type of maltreatment: neglect or non-sexual abuse (referent)	79%	--	0	1
Type of maltreatment: sexual abuse	21%	--	0	1
Out-of-home placement	31%	--	0	1
Child is male	50%	--	0	1
Child age in years	12.95	0.21	6	16
Child is African American	26%	--	0	1
Child is Hispanic	9%	--	0	1
Child insurance: public (referent)	75%	--	0	1
Child insurance: private	19%	--	0	1
Child insurance: self-pay	6%	--	0	1

Table 9. Comparison of youth under different jurisdictions (N=178 youth within 51 agencies)

	Child welfare control		Juvenile justice control		Joint control	
	N=67		N=64		N=47	
	Weighted Mean	Std Error	Weighted Mean	Std Error	Weighted Mean	Std Error
Youth Attributes						
Court ordered services	37%	--	31%	--	39%	--
Substance abuse problem	58%	--	52%	--	79%	--
Mental health problem	75%	--	74%	--	76%	--
Type of maltreatment: neglect or non-sexual abuse (referent)	83%	--	71%	--	85%	--
Type of maltreatment: sexual abuse	15%	--	29%	--	15%	--
Out-of-home placement	36%	--	34%	--	14%	--
Child is male	56%	--	36%	--	49%	--
Child age in years	12.94	0.33	13.05	0.25	13.80	0.23
Child is African American	23%	--	23%	--	30%	--
Child is Hispanic	10%	--	7%	--	15%	--
Child insurance: public (referent)	89%	--	78%	--	56%	--
Child insurance: private	5%	--	19%	--	35%	--
Child insurance: self-pay	6%	--	3%	-	9%	--

Table 10. Logistic regression models predicting mental health service use

	Outpatient Mental Health				Inpatient Mental Health ^{**}					
	N=178 youth				N=170 youth					
	OR	Robust SE	P> t	95% CI	OR	Robust SE	P> t	95% CI		
<i>Collaboration between child welfare and juvenile justice</i>										
Jurisdiction: child welfare only	3.09	1.78	*	1.00	9.74	0.62	0.64	0.08	4.86	
Jurisdiction: juvenile justice only	0.95	0.53		0.32	2.88	0.49	0.44	0.08	2.92	
Information systems: extent of data sharing	1.26	0.95		0.28	5.69	3.55	1.38	**	1.63	7.73
Connectivity: number of inter-agency ties	0.95	0.22		0.60	1.50	1.12	0.26		0.71	1.77
<i>Control variables</i>										
Non-metropolitan location	5.85	5.32		0.95	35.95	0.22	0.22		0.03	1.57
Local provider availability	1.04	0.04		0.97	1.11	1.00	0.03		0.94	1.07
Court ordered services	23.17	17.99	***	4.92	109.16	2.07	0.92		0.85	5.04
Comorbidity	0.14	0.12	*	0.02	0.79	0.56	0.38		0.15	2.15
Type of maltreatment: sexual	1.36	0.84		0.40	4.68	0.16	0.11	**	0.04	0.64
Child in out-of-home placement	2.60	1.86		0.62	10.87	2.13	1.14		0.73	6.19
Child is male	0.89	0.52		0.28	2.88	0.50	0.29		0.15	1.61
Child age in years	0.99	0.28		0.57	1.73	0.64	0.22		0.32	1.26
Child is African American	1.95	1.06		0.66	5.78	0.35	0.26		0.08	1.54
Child is Hispanic	1.28	1.53		0.12	13.89	6.02	5.75		0.89	40.55
Child insurance: private	2.04	1.54		0.45	9.24	0.17	0.11	**	0.04	0.61
Child insurance: self-pay	0.94	1.08		0.10	9.21	(dropped)				

^{**}Self-pay predicted failure perfectly (dropped 8 obs)

*p<0.05 **p<.01 ***p<.001

Table 11. Logistic regression models predicting substance abuse treatment

	Outpatient Substance Abuse Treatment					Inpatient Substance Abuse Treatment ^{**}				
	N=173 youth					N=162 youth				
	OR	Robust SE	P> t	95% CI		OR	Robust SE	P> t	95% CI	
<i>Collaboration between child welfare and juvenile justice</i>										
Jurisdiction: child welfare only	6.07	5.27	*	1.07	34.36	9.66E+07	2.98E+08	***	2.27E+05	4.11E+10
Jurisdiction: juvenile justice only	2.22	1.98		0.37	13.21	4.39E+08	4.48E+08	***	3.66E+05	5.88E+10
Information systems: extent of data sharing	1.57	0.57		0.75	3.25	3.30	1.44	**	1.39	7.87
Connectivity: number of inter-agency ties	1.27	0.33		0.76	2.12	1.16	0.29		0.71	1.89
<i>Control variables</i>										
Non-metropolitan location	6.08	5.54		0.99	37.51	5.19	6.36		0.45	59.93
Local provider availability	0.87	0.28		0.46	1.65	2.14	0.76	*	1.05	4.35
Court ordered services	1.00	0.39		0.46	2.17	5.72	3.70	**	1.57	20.81
Comorbidity	13.93	15.78	*	1.45	133.65	38.97	67.60	*	1.22	1244.39
Type of maltreatment: sexual	2.88	2.77		0.42	19.69	0.60	0.45		0.13	2.72
Child in out-of-home placement	0.56	0.38		0.14	2.17	0.86	0.52		0.25	2.90
Child is male	1.80	1.16		0.50	6.52	0.43	0.25		0.14	1.37
Child age in years	1.17	0.16		0.88	1.54	1.17	0.29		0.72	1.91
Child is African American	1.17	0.72		0.35	3.97	1.08	0.86		0.22	5.26
Child is Hispanic	0.85	1.05		0.07	10.03	0.16	0.31		0.00	7.34
Child insurance: private	2.84	2.02		0.68	11.78	0.04	0.04	**	0.00	0.34
Child insurance: self-pay	2.24	2.72		0.20	25.37	(dropped)				

^{**}Self-pay predicted failure perfectly (dropped 11 obs)

*p<0.05 **p<.01 ***p<.001

CHAPTER V: HOW CHILD WELFARE AGENCIES FUND MENTAL HEALTH SERVICES FOR CHILDREN

Nationally, children are entering the child welfare system in larger numbers and at earlier ages than they were two decades ago (Childrens Bureau, 2009; Sedlak, et al., 2010), imposing increased responsibility on public agencies to address their complex service needs. Children in the child welfare system have significantly higher levels of health problems than children in the general population, with prevalence data indicating that up to 86% have one or more physical, developmental, or mental problems (Burns, et al., 2004; Halfon, Mendonca, & Berkowitz, 1995; Kortenkamp & Ehrle, 2002; Leslie, et al., 2005).

National standards proposed by associations such as the Child Welfare League of America recommend that children involved with child welfare receive mental health screenings, assessments, and any needed services (American Academy of Child and Adolescent Psychiatry, 2003; Child Welfare League of America, 1988). However, research suggests that fewer than half of children in child welfare receive mental health assessments or needed mental health services (Burns, et al., 2004; Hurlburt, et al., 2004; Leslie, et al., 2003; Raghavan, Inoue, Ettner, Hamilton, & Landsverk, 2010; Risley-Curtiss, et al., 1996). This gap is troubling, and may have ramifications not only for these children but for society as a whole. Untreated mental health problems have been associated with academic difficulties, decreased likelihood of high school completion, and increased risk of homelessness and involvement with the criminal justice system in later life (Courtney, et al., 2001; Taussig, 2002; Zima, et al., 2000).

While receipt of needed mental health services can improve outcomes for these children, child welfare agencies are not able to ensure service access for many of the children under their care (Glascoe, 2000; Halfon, et al., 2002; Simms, Dubowitz, & Szilagyi, 2000). Medicaid is currently the predominant means of financing mental health services for children involved in child welfare (English

& Freundlich, 1997; Raghavan, Aarons, Roesch, & Leslie, 2008). However, a national study found that the majority of public mental health agencies also used non-Medicaid funds to pay for basic mental health assessments, ongoing services, and case management for children involved with child welfare (Raghavan, et al., 2007). In particular, almost half of county mental health agencies reported that problems with Medicaid necessitated the use of child welfare funds to pay for mental health services for these children (Raghavan, et al., 2007).

Accessing Medicaid benefits can be challenging. Complex eligibility rules, time-consuming administrative procedures, and extensive waits for application processing create barriers to enrollment (Day, 2006; Flores, Abreu, Brown, & Tomany-Korman, 2005; Rosenbaum & Wise, 2007; Soman, Smith, & Duenas, 2008). Complex reimbursement rules also undermine use of Medicaid funds to pay for children's care (Feinberg, Swartz, Zaslavsky, Gardner, & Walker, 2002; Mauch, Kautz, & Smith, 2008). In addition, many mental health providers are reluctant to accept this form of insurance because of the low reimbursement rates (e.g. Bouman, Cohen, Chizewer, Altman, & Yates, 2007).

As a result of these limitations in Medicaid coverage, child welfare agencies often play a role in funding mental health care for the children under their supervision (e.g. Raghavan, et al., 2007). However, little is known about just how often this occurs, whether these funds are used for children with Medicaid as well as those without, and whether child welfare agency strategies for funding children's mental health care affect service use. These questions motivated the current study.

Medicaid and children's mental health services

Medicaid is theoretically required to fund all children's health services through the Medicaid Early Periodic Screening, Diagnosis, and Treatment (EPSDT) benefit. The EPSDT benefit, first established in 1967 as part of the Social Security Act, and later amended in 1989 and 2005, requires Medicaid to fund early and preventive health care – including screening and assessment for mental health – for all Medicaid-eligible children. The EPSDT program also mandates treatment of disorders identified through this screening and assessment process, even if the state's Medicaid program does not typically include the treatment of these conditions as a covered service (Kronebusch, 2001;

Rosenbaum & Wise, 2007). This mandate is driven by a definition of “medical necessity” that is much broader than that found in typical Medicaid programs or even in the other public insurance program for families with children, the State Children’s Health Insurance Program (SCHIP) (Rubin, Halfon, Raghavan, & Rosenbaum, 2005).

However, in practice, access to public benefits such as Medicaid varies with local economic and political factors (Conlan, 1998; Keiser, 1999; Keiser, Mueser, & Choi, 2004; Keiser & Soss, 1998; Meier, Stewart, & England, 1991; Salamon, 1995). For example, research has demonstrated that mental health assessments for children in the general population frequently fall short of EPSDT program standards, and that Medicaid programs often fail to pay for treatment, even when service needs are identified through the EPSDT assessment (Halfon, et al., 2002; Rosenbaum & Wise, 2007; Small, 1991). This failure has been attributed to state and local variation in how the Medicaid EPSDT benefit is implemented: when the broad definition of “medical necessity” included in the EPSDT benefit is not legally enforced, coverage tends to default to non-EPSDT Medicaid standards, which are almost always less generous than that provided through Medicaid EPSDT. Existing research on the topic suggests that even after litigation has occurred, local courts vary significantly in their willingness to order Medicaid agencies to comply with consent decrees or court orders related to the Medicaid EPSDT benefit (Luke, 2008; Perkins, 2009). As a consequence of these and several other factors, Medicaid coverage for children’s mental health care tends to vary significantly at the local level.

Child welfare agencies that experience difficulty accessing Medicaid for their clients may choose to supplement or otherwise replace Medicaid payments with child welfare funds. Although research suggests that child welfare funds are often used to pay for children’s mental health services (e.g. Raghavan, et al., 2007), little is known about the extent to which agencies do so for Medicaid-eligible or Medicaid-covered children. Child welfare agencies also face funding challenges (Bess & Scarcella-Andrews, 2004), and have limited funds with which to spend on mental health service provision. Therefore, while agencies may be willing to supplement Medicaid with child welfare funds, it is possible that this supplementation will negatively influence either the number of children receiving services or the types of mental health services that children receive.

In child welfare, the availability of Medicaid EPSDT funds has been described as critical in helping agencies meet children's mental health service needs (Rubin, et al., 2005). Although not specific to child welfare, evidence from one study suggests that when consistently enforced, the EPSDT benefit can increase mental health service use: Snowden et al. (2007) found that for clients in 53 autonomous county mental health plans in California, enforcement of EPSDT mental health benefits by a consumer-driven lawsuit resulted in an almost four-fold increase in mental health service funding over a five-year period and was associated with an increase in outpatient visits per client and a corresponding decline in emergency service use. Except for the study by Snowden et al. (2007), the relationship between the use of Medicaid EPSDT funds and children's mental health care has not yet been empirically tested. Examining associations between use of Medicaid EPSDT dollars and children's access to needed mental health care is important because states' efforts to reduce costs may soon result in a number of changes to the Medicaid EPSDT program (e.g. Rosenbaum & Wise, 2007; Soman, et al., 2008). It is unclear whether exemptions for children in foster care and/or the expansive definition of "medical necessity" in the original Medicaid EPSDT legislation will be maintained. Determining how child welfare agencies' ability to use Medicaid EPSDT funds influences children's access to mental health care could help clarify the importance of the program for this vulnerable population.

The current study examined the role of child welfare funding in facilitating children's access to needed mental health services by addressing the following research questions: (1) What percentage of local child welfare agencies use child welfare funds to pay for children's mental health services, and are they doing so even for Medicaid-insured children?; (2) How does local child welfare agency supplementation of Medicaid with child welfare funds correlate with the percentage of children receiving mental health care?; and finally, (3) How does child welfare agency use of Medicaid EPSDT dollars to fund mental health assessments and services correlate with the percentage of children using these services? Understanding how child welfare agencies' use of these funds influences children's service access is important, given limited child welfare funds available to pay for children's mental health services (Bess & Scarcella-Andrews, 2004) as well as continued revisions to public programs for children's mental health such as the Medicaid EPSDT benefit.

Methods

Data Sources

Data on children's mental health service receipt were drawn from the Child Protective Services (CPS) cohort of the National Survey of Child and Adolescent Well-Being (NSCAW), the only national study of children in the U.S. child welfare system (Dowd, et al., 2004). NSCAW was funded by the Administration for Children and Families within the U.S. Department of Health and Human Services and was carried out by Research Triangle Institute (RTI) International. A two-stage stratified design was used to sample children in 92 primary sampling units – corresponding to the areas served by 92 local CPS agencies – within 46 states throughout the U.S. The CPS cohort within NSCAW is nationally representative of children investigated or assessed by local Child Protective Services (CPS) agencies between October 1999 and December 2000, excluding only the child welfare population located within four states whose human subject requirements' exceeded the resources available for data collection.

Assessments of child context and well-being were conducted through interviews with each child and their current caregiver at 2-6 months (Wave 1, beginning in 1999), at 12 months (Wave 2), at 18 months (Wave 3), and at 36 months (Wave 4) after the close of the investigation or assessment. Although a fifth wave was collected at 48 months, these data were omitted from the current analyses due to high attrition in response rates as youth within the sample turned 18 years of age.

Service caseworkers were interviewed about children's receipt of formal mental health assessments at Wave 2. Current caregivers were asked about children's mental health service need and children's receipt of outpatient and in-home services at Waves 1, 3, and 4. Youth aged 11 years and older were asked about whether they received counseling at Waves 1, 3, and 4.

Data on local child welfare agencies' use of Medicaid EPSDT dollars and of child welfare funds to pay for children's mental health services were obtained from the Caring for Children in Child Welfare (CCCW) study, a telephone-administered key informant interview of NSCAW contact persons in each county. Using an identical sampling frame as that of NSCAW, and fielded between 2000 and 2001, CCCW identified 780 key informants, an average of 12 (and a median of 13) informants within

each county, who provided detailed information regarding the organization and financing of services within county mental health and child welfare agencies. Additional details regarding the design and fielding of CCCW are available elsewhere (e.g. Libby, et al., 2007).

Additional contextual data, including information on state child welfare agencies' different federal funding streams, were obtained from the 2000 Area Resource File (ARF), the Child Welfare League of America National Data Analysis System (NDAS), and from data on the availability of local mental health professionals developed by Thomas, Ellis, Konrad, et al. (2009). All data were merged using county-level identifiers. Given the restricted nature of the NSCAW data, the merge was conducted by RTI International upon request.

Given the current study's interest in the influence of the local resource context upon service receipt, the merged data were subsequently aggregated to the agency level to permit analysis of local child welfare agencies within states. Participation of county child welfare agencies in the study was adjusted by the probability of selecting the child's county of residence (Dowd, et al., 2004). When incorporated in analyses, these weights yield approximately design-unbiased and consistent estimates for the corresponding population quantities (Christ, et al., 2007; Pfefferman, et al., 1998).

Sample

At baseline, the initial NSCAW sample consisted of 92 county child welfare agencies within 36 states and was designed to be representative of all children in the U.S. who were subjects of child abuse or neglect investigations or assessments conducted by Child Protective Services (CPS) in 1999-2000 and living in states not requiring agency first contact (Dowd, et al., 2004). CCCW data on county child welfare agencies' use of child welfare dollars to fund mental health services were available for 87 of these 92 agencies. However, of these 87 agencies, data on whether the county utilized Medicaid EPSDT dollars to fund children's mental health services was only available for 63 agencies. Therefore, the final analytic sample consisted of 63 county child welfare agencies within 31 states. Despite the loss of cases, this final analytic sample accounted for more than 94% of children within the full NSCAW sample and still included the eight states with the largest child welfare

populations in the United States; this final analytic sample therefore still represented the majority of children and agencies within the full NSCAW sample.

Measures

Dependent variables. Four dependent variables were used to capture children's receipt of mental health assessments and mental health services (Table 1): *mental health assessment*, *outpatient mental health*, *in-home services*, and *counseling*. Children's receipt of a *mental health assessment* was based on the service caseworker's report of whether each child received a formal assessment for an emotional, behavioral, or attention problem by a psychologist or medical professional. *Outpatient mental health* and *in-home services* were both based on the current caregiver's (either permanent or foster caregiver) report of children's service receipt. *Outpatient mental health* was defined as whether the child received services for an emotional, behavioral, or attention problem from a day treatment program, a mental health or community health center, or from a psychiatrist, psychologist, social worker, or psychiatric nurse. *In-home services* were defined as children's receipt of in-home counseling or crisis services. The final service, *counseling*, was available only for youth aged 11 years or older, and was based on youth self-report of receiving counseling from a school counselor, doctor, or therapist to help deal with feeling depressed or blue.

Given the study's focus on agency-level service provision, these variables were operationalized as the percentages of children within the agency who received a mental health assessment or mental health service within 36 months of becoming involved with the child welfare system. The percentages for the three mental health services – *outpatient mental health*, *in-home services*, and *counseling* – were calculated only for children who needed mental health services. In this study, need for mental health services was operationalized as a clinical score (64 or above) on either the internalizing or externalizing scales of the Child Behavior Checklist (CBCL) at baseline (Achenbach & Edelbrock, 1983). The CBCL is only validated for children ≥ 2 years of age at baseline; therefore, children under 2 years of age were not included in this calculation.

Independent variables. *Supplementation of Medicaid with child welfare funds* was operationalized as a dichotomous variable set =1 if key informants within local child welfare agencies indicated that they used child welfare funds to pay for children's mental health services either because not enough providers accept Medicaid or because accessing Medicaid services was too complicated. *Use of Medicaid EPSDT dollars* was operationalized as whether a key informant within the child welfare agency reported that Medicaid EPSDT dollars were utilized to pay for mental health services.

Control variables. Five additional variables were also included to control for potential confounders of the associations between focal predictors and children's use of mental health services. These variables were other sources of federal funding for child welfare, local provider availability, agency location in a non-metropolitan area, the percentage of children in the agency in out-of-home care, and the percentage of children within the agency who did not have insurance of any kind (i.e. "completely self-pay").

Federal funding for child welfare. In addition to county-level variation in the use of Medicaid EPSDT dollars, there is also variation in the availability of other federal funding for child welfare. In general, federal funding for child welfare purposes can be separated into two categories – dedicated funds, or monies allocated specifically for child welfare purposes, and non-dedicated funds, which are not specifically allocated for child welfare but can still be used to fund these activities.

Currently, the principal sources of federal funds dedicated for child welfare activities come from both Title IV-B and Title IV-E of the Social Security Act (Scarcella, Bess, Zielewski, et al., 2006). Of these two types of monies, Title IV-B is the only one that can readily be used to fund children's mental health service receipt. However, federal allocation of Title IV-B funds is available only for a specific set of means-tested children and is subject to a relatively low funding cap. In addition, the total amount of Title IV-B funds provided varies because reimbursement rates for certain expenditures are dependent on states' per capita income (Bess & Scarcella, 2004; Geen, Sommers, & Cohen, 2005).

Non-dedicated federal funds include all federal dollars not specifically allocated for child welfare that were used for child welfare purposes. Sources of these funds include Medicaid EPSDT

and non-EPSTD, the State Children's Health Insurance Program (SCHIP), Temporary Assistance for Needy Families (TANF), the Social Services Block Grant (SSBG), and Supplemental Security Income (SSI). Eligibility requirements for use of these non-dedicated funds varies between states, but when available for child welfare purposes, provide child welfare agencies with wider discretion in the use of funds, particularly with regards to the provision of behavioral health services (Scarcella, et al., 2006).

By summing the total number of Title IV-B and non-dedicated federal funds used for child welfare purposes, a variable was created that controlled for variation in the amount of federal funding available to child welfare agencies. Although it would have been preferable to control for the amount of federal funding used by each county child welfare agency, data on federal funding were only available at the state level and was therefore constructed as a state-level variable. This variable was also divided by the total number of children in out-of-home care within the state, which was the best available proxy for total state child welfare caseload. While the number of children in out-of-home care does not accurately represent states' entire caseload, research has demonstrated that children in out-of-home care are more likely to receive mental health services, and also account for the majority (>60%) of state and county child welfare expenditures (Geen, Boots, & Tumlin, 1999).

Local provider availability. Local provider availability was operationalized as the percentage of unmet mental health need within the county, including that for providers with and without prescription authority (Thomas, et al., 2009). While this measure is not specific to pediatric providers, it does provide an overall indication of potential provider availability within each county.

Non-metropolitan area. Agency location in a non-metropolitan area was drawn from the 2000 Area Resource File (ARF), and served as a control for rural-urban differences in service provision and as a proxy for organizational size (Alexander, et al., 1999; Johnston & Romzek, 1999). An agency was identified as being in a non-metropolitan area (=1) if the ARF rural-urban continuum code indicated that it was not located in a metropolitan area (Beale, 2003).

Percentage of children in out-of-home care. The percentage of children in out-of-home care was calculated based on reports of whether the child was placed in foster care, kinship care, or group homes at baseline, or within 2-6 months of becoming involved with the child welfare system. Funding to provide services for children in out-of-home care is more generous than for those maintained in

home (Wulczyn, 2000); as a result, previous research has demonstrated that these children are more likely to receive mental health services (Geen, Boots, & Tumlin, 1999).

Percentage of children without insurance. The percentage of children within the local child welfare agency who lacked insurance (i.e. were self-pay) was based on the current caregivers' report of children's insurance status. Lack of insurance was expected to make it more difficult for the child welfare agencies to facilitate access to mental health care for the child. Children were identified as self-pay if the caregiver indicated that the child did not have insurance through Medicaid or another state-funded program, private insurance, or coverage through the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

Analyses

All analyses were conducted using the Stata 10.0 -svy- module (StataCorp, 2007). The -svy- module permits analyses that account for the complex survey design of the data, accommodating correlations in outcomes across child welfare agencies located within the same state, as well as probability weights and stratification.

Given that the agency-level probability weights within NSCAW incorporate survey non-response but not item non-response (Christ, et al., 2007; Dowd, et al., 2004), t-tests were conducted to determine if CCCW data on county child welfare agencies' use of Medicaid EPSDT and child welfare funds were missing at random or if a correction for sample selection bias would be required (Allison, 2002). Results indicated that agency responses to these items in the full sample did not differ significantly from those in the analytic sample, or from those excluded due to missing values on other variables; therefore, it was concluded that the missing data were ignorable. As the dependent variables were normally distributed, ordinary least squares (OLS) regression models were used to estimate associations between child welfare agencies' local resource context and children's access to mental health care.

Bivariate correlations among key study variables did not indicate any problematic collinearity. The secondary data analysis was approved by the Institutional Review Board at the lead author's

home institution. The original data collection was approved by an Institutional Review Board at RTI International.

Results

Table 12 provides descriptive information on local child welfare agencies' use of child welfare funds to pay for children's mental health services. A total of 82 of 87 child welfare agencies (94%) indicated that they used child welfare funds to pay for children's mental health services. Of these 82 child welfare agencies, 76 (93%) reported that these funds were used to fund mental health services for children with Medicaid coverage. The majority (76%) reported that they used child welfare funds both in addition to and in place of Medicaid. However, a significant percentage of agencies (67%) reported using these funds to pay for mental health services for children without Medicaid coverage. Over half of agencies (60%) indicated that their primary source of these funds was the state child welfare systems budget. A large percentage of agencies indicated that they used child welfare funds to pay for mental health assessments and diagnoses (90%), home-based mental health services (67%), and outpatient psychotherapy (71%). Fewer agencies used child welfare funds to pay for day treatment or partial hospitalization (32%), or for school-based mental health services (18%).

Table 13 provides descriptive statistics for all study measures based on the final analytic sample. Approximately 40% of children within child welfare agencies received mental health assessments. On average, 36% of the children within these agencies who needed mental health services received outpatient mental health treatment and 26% received in-home services. Within these agencies, a mean of 69% of youth aged 11 years or older who needed mental health services reported receiving counseling for feeling depressed or blue.

Approximately 61% of child welfare agencies reported funding mental health services because of problems with Medicaid related to provider availability or administrative access. 38% of child welfare agencies within the sample reported being able to use Medicaid EPSDT dollars to pay for mental health services.

Multiple regression results are shown in Tables 14-15. The R^2 indicated that the independent variables and covariates explained over 54% of the variation in all four models examining mental

health service assessment and provision. Medicaid supplementation was associated with fewer children receiving mental health assessments (-10%, $p < 0.01$) and fewer youth receiving counseling services (-14%, $p < 0.01$). Local child welfare agencies' use of Medicaid EPSDT dollars to fund children's mental health services was positively and significantly associated with all measures of children's mental health care except in-home services. The coefficients indicated that child welfare agencies that used Medicaid EPSDT dollars to fund children's mental health care were able to facilitate access to mental health assessments to 12% more children ($p < 0.01$), outpatient mental health services to 7% more children ($p < 0.05$), and counseling to 10% more youth aged 11 years and older ($p < 0.01$) than child welfare agencies that did not utilize Medicaid EPSDT dollars to fund children's mental health care.

Several covariates were also significantly associated with children's access to mental health care. Each \$10,000 increase in the amount of federal funds allocated per child was associated with a 3% increase in the percentage of children receiving mental health assessments ($p < 0.05$) and a 4.4% increase in the percentage of youth receiving counseling. In addition, the percentage of unmet mental health need within counties was significantly and positively associated with the percentage of children receiving in-home services ($p < 0.01$). Agency location in a non-metropolitan area was also positively associated with the percentage of children receiving mental health assessments ($p < 0.05$) and outpatient mental health ($p < 0.05$). Consistent with expectation, the percentage of children in out-of-home care was significantly associated with children's mental health care. Finally, the percentage of children without insurance was significantly and negatively associated with mental health assessments and all services except in-home services.

Discussion

The current study is the first to examine the extent of child welfare agencies' use of child welfare dollars to fund children's mental health services. Results indicate that the majority of child welfare agencies used child welfare funds to cover the cost of mental health service provision, and that they did so even for Medicaid-covered children. Mental health assessments in particular, appeared to be paid for using child welfare funds, which came primarily from state child welfare

system budgets. Findings also indicated that use of child welfare funds to supplement or replace Medicaid payments was negatively associated with children's receipt of mental health care. While this finding was only statistically significant in the models examining mental health assessments and youth's receipt of counseling, the direction of the association was also negative for the other two services, outpatient mental health and in-home services.

Findings also indicated that even after controlling for other sources of funding and local provider availability, Medicaid EPSDT funds had a significant impact on children's access to all types of mental health care except in-home services. The non-significant findings related to in-home services may reflect service substitution on the part of the agency. Child welfare caseworkers can provide in-home services at significantly lower cost to the agency than services such as outpatient mental health or counseling, which may require referrals to external professionals; therefore, when Medicaid EPSDT funds are not available to pay for children's mental health care, agencies may rely more heavily on in-home services instead. The positive associations between the percentage of unmet mental health need in the county and children's receipt of in-home services are consistent with this possibility and suggest that in areas where child psychologists and psychiatrists are less available, caseworkers may focus more on facilitating children's access to other types of services.

These findings have a number of implications for children's mental health. Over the last two decades, state and local governments have increasingly shifted their spending for health and human services – including children's mental health – to the Medicaid program (e.g. S. Smith, 2009). Because Medicaid offers a greater federal match than other public programs, this shift in spending allows states to maximize the amount of federal matching funds obtained. However, the matching requirement also means that states are now spending more money on Medicaid than they otherwise would. Consequently, this strategy has also resulted in a reduction in the amount of public funds available to meet the health care needs of other low-income uninsured populations that are not eligible for Medicaid (e.g. Frank, Goldman, & Hogan, 2003). Child welfare agencies have finite resources with which to pay for health services for families: federal child welfare funds for service provision are capped (Wulczyn, 2000), and states' decisions to shift spending for health and human services to the Medicaid program are also likely to impact the availability of public funds for child

welfare purposes. Consequently, child welfare agencies' decision to supplement or replace Medicaid payments with child welfare funds may occur at the expense of funding services for other children and their families.

Problems with local Medicaid accessibility resulting from low Medicaid reimbursement rates and/or inadequate coverage of children's mental health care are only likely to exacerbate this trend. While it does not address problems with providers' willingness to accept Medicaid, the Medicaid EPSDT benefit offers a more expansive definition of "medical necessity" that may help facilitate children's access to needed mental health services: the EPSDT benefit mandates treatment of disorders identified through the mental health screening and assessment process, even if the state does not typically provide coverage for that condition. In the current study, child welfare agencies' ability to use Medicaid EPSDT funds was significantly and positively associated with children's access to mental health services requiring more costly professional expertise (i.e. mental health assessments, outpatient mental health, and counseling). Without local enforcement of the Medicaid EPSDT benefit or more generous allocation of non-dedicated federal funds for child welfare purposes, agencies may simply be unable to fund mental health care for all of the children under their supervision. Prior research suggests that child welfare caseworkers focus on providing services to children with the most severe mental health problems, particularly those with externalizing behavioral symptoms (Burns, et al., 2004; Farmer, et al., 2001). One possible explanation is that caseworkers do so in order to ensure that limited resources are provided to those with the highest needs.

The current study findings also have implications for children's mental health access under the 2010 Health Care Reform bill. First, while the Medicaid program has been expanded (Kaiser Family Foundation, 2010), the new legislation in many respects resembles the Deficit Reduction Act of 2005 and the Tax Relief and Health Care Act of 2006 in that it permits states to substitute "benchmark" plans in place of standard Medicaid benefit packages. Compared with Medicaid EPSDT, these "benchmark" plans typically contain greater limits on covered benefit classes as well as narrower definitions of "medical necessity" (Rosenbaum & Wise, 2007). Consequently, without close attention to how these plans are being implemented, children's access to mental health services may either not improve or may even degrade. In the current study, child welfare agencies' use of Medicaid

EPSDT funds – the public benefit with the most expansive definition of medical necessity – was significantly and positively associated with children’s receipt of mental health services. As states seek to control Medicaid costs it will be important to examine whether they are implementing narrower definitions of medical necessity and how these definitions influence children’s access to and receipt of mental health services.

In addition, while the 2010 Health Care Reform legislation includes provisions to increase Medicaid payments for primary care services provided by primary care doctors, it is less clear how reimbursement rates for mental health services provided by primary care doctors or mental health providers will change (Kautz, Mauch, & Smith, 2008). If rates are not sufficient to cover the costs of mental health service provision and do not induce more providers to accept public insurance, then service access may still not appreciably change. In the current study, when child welfare agencies supplemented Medicaid either because providers would not accept it or because of Medicaid’s administrative complexity, fewer children received services.

Finally, while the 2010 Health Care Reform legislation offers states some financial incentives to offer Medicaid coverage and remove cost-sharing for preventive services rated A or B as recommended by the U.S. Preventive Services Task Force (USPSTF) (Kaiser Family Foundation, 2010), the implications for children involved with child welfare are less clear. In particular, it is uncertain whether these incentives will improve coverage of mental health screenings or assessments for children. Mental health screenings tend to be brief and focused on identifying individuals with potential behavioral health needs, while assessments are more detailed evaluations of individuals’ service needs (Child Welfare League of America, 1988). Currently, the USPSTF recommends screening of adolescents aged 12-18 for major depressive disorder, but does not refer to screenings or assessments for other mental health conditions or for children less than 12 years of age. Given the importance of screenings and assessments to the identification of service need, and the high rates of unmet mental health need for children involved with child welfare (Raghavan, et al., 2010), this is an issue that warrants attention.

In addition to the main results of the study, several additional findings warrant attention. The positive associations between agency location in a non-metropolitan area and the percentage of

children receiving mental health assessments and the percentage of youth receiving counseling were unexpected, given prior evidence that children located in rural and semirural areas are less likely to receive mental health services (Cohen & Hesselbart, 1993; Lambert, Ziller, & Lenardson, 2009). However, in general, rural location is expected to reduce access due to lack of providers; in the current study, unmet mental health need was included as a separate covariate. Therefore, it is possible that after controlling for unmet mental health need within the county, the direction of the association is positive because agency caseloads in non-metropolitan areas tend to be smaller and it may therefore be easier for caseworkers in these areas to facilitate service access for the children under their care.

A number of other limitations must also be considered when interpreting the current study findings. First, the measure of federal funding utilized in this study was only available at the state rather than the county level. As the allocation of non-dedicated funds for child welfare purposes is determined at the state level, this measure is still reflective of the likely availability of these federal funds at the county level but it is not sensitive to inequalities in the distribution of funds between counties. Second, the data used in this study did not contain information on funding provided by states or counties for child welfare purposes. Federal funds – and particularly non-dedicated funds such as those available through Medicaid and the Social Services Block Grant – account for the majority of child welfare expenditures (Scarcella, et al., 2006). However, in carrying out their responsibilities to children, child welfare agencies rely upon a combination of federal, state, and local funding. The current study was not able to control for the amount or source of child welfare funds (state, local, or other) used by child welfare agencies to pay for children’s mental health services. Therefore, the analyses did not completely capture all sources of variation in local child welfare agencies’ resource context.

In addition, NSCAW data allowed examination only of whether children received mental health assessments and services at all, not the appropriateness, adequacy, or intensity of services received. Examining any service use is important in its own right given that many children involved with child welfare fail to receive any needed mental health services at all (Burns, et al., 2004; Raghavan, et al., 2010). However, future research should examine factors affecting access to

evidence-based mental health services (e.g. Cooper & Aratani, 2009) as well as adequacy of service utilization. The current study findings suggest that when faced with limited funds, child welfare agencies make efforts to meet children's mental health needs by engaging in service substitution. However, in-home services may be an ineffective replacement for a more costly but proven therapy. Understanding how exigencies in child welfare agencies' external environments – such as the local accessibility of Medicaid – influence children's access to specific types of services could be of utility to both policymakers and child welfare administrators.

Finally, while the data used in this study are the most recent national data available, child welfare agencies' use of Medicaid EPSDT dollars and other funding practices related to mental health service provision may have changed since these data were collected (October 1999 through 2005). Particularly given legislative changes that have occurred in the last several years, it will be important for future research to determine how child welfare agencies' local resource context has changed, and how these changes influence children's access to mental health services.

Despite these limitations, the current study is the first to use a national sample to examine the extent to which child welfare agencies fund mental health services for children, and the association between different funding sources and the types of mental health services that children receive. Overall study findings indicate that child welfare agencies are funding mental health services even for Medicaid-covered children, and that this supplementation of Medicaid negatively impacts the number of children receiving needed mental health services. The results also provide support for the importance of Medicaid EPSDT dollars to children's mental health service access. These findings are consistent with literature arguing that non-EPSDT public programs do not provide the same levels of comprehensive coverage as those that use Medicaid EPSDT (e.g. Rosenbaum & Wise, 2007). The positive role of Medicaid EPSDT in facilitating children's access to both mental health assessments and treatment services found here suggest that continued attention to the implications of legislative revisions to the EPSDT benefit introduced in 2005 and 2006, as well as to any changes introduced under the 2010 Health Care Reform bill is warranted.

Table 12. Local child welfare agencies' use of child welfare funds to pay for children's mental health services in 2000

	N	Yes (%)
Does the child welfare agency use child welfare funds to pay for children's mental health services?	87	94%
Does the child welfare agency provide any child welfare-funded mental health services to youth with Medicaid coverage?	82	93%
Do agencies that attempt to recover these funds by billing Medicaid or EPSDT experience problems with this process related to denial of payment, late payment, or partial payments?	46	54%
Does the child welfare agency use its funds to pay for children's mental health services in addition to Medicaid or in place of Medicaid? (select one)		
In addition to Medicaid	79	15%
In place of Medicaid	79	8%
Both	79	76%
Why does the child welfare agency use its own funds to pay for children's mental health services? (check all that apply)		
Not enough providers accept Medicaid	79	67%
Too complicated to access Medicaid services	79	11%
Problems accessing providers experienced at working with children in child welfare	79	35%
Children not eligible for Medicaid	79	67%
Other	79	47%
What types of mental health services are paid for using child welfare funds? (check all that apply)		
Assessment and diagnoses	82	90%
Home-based mental health	82	67%
Day treatment or partial hospitalization	82	32%
Outpatient psychotherapy	82	71%
School-based mental health	82	18%
What is the primary source of child welfare funds used to pay for these mental health services? (select one)		
State child welfare systems budget	82	60%
Local child welfare systems budget	82	23%
Other	82	17%

Table 13. Descriptive statistics (63 local Child Protective Service agencies within 31 states)

	Mean	Std Error	Min	Max
<i>Dependent Variables (no restrictions)</i>				
% Children receiving mental health assessment	39.54	4.55	10	100
<i>Dependent Variables (restricted to children needing mental health services)</i>				
% Children receiving outpatient mental health	35.70	5.57	0	100
% Children receiving In-home services	26.38	6.85	0	100
% Youth (age 11+ years) receiving counseling	68.76	5.41	0	100
<i>Independent Variables</i>				
Supplement Medicaid with child welfare funds (yes/no)	61%	--	0	1
Use of Medicaid EPSDT to fund mental health services (yes/no)	38%	--	0	1
<i>Other Covariates</i>				
Total federal funds (\$10,000 per child)	1.28	0.88	0.03	2.79
Local provider availability: % unmet need	19.76	2.19	0	63
Non-metropolitan county	54%	--	0	1
% Children in out-of-home care	25.83	15.98	0	66
% Children without insurance	8.50	6.33	0	33

Table 14. Multiple regression model of the percentage of children receiving mental health assessments

	Mental Health Assessments				
	(All Children and Youth Aged 2+)				
	N=63				
	R²=0.740				
	Coeff.	Std Err.	P> t 	95% CI	
Supplement Medicaid (yes/no)	-0.101	0.035	**	-0.171	-0.030
Use of Medicaid EPSDT (yes/no)	0.122	0.041	**	0.040	0.204
Total federal funds (\$10,000 per child)	0.030	0.010	*	0.002	0.060
Local provider availability: % unmet need	-0.002	0.002		-0.005	0.001
Non-metro	0.091	0.034	*	0.023	0.160
% Children in out-of-home care	0.638	0.168	**	0.302	0.974
% Children without insurance	-1.051	0.298	**	-1.658	-0.454
Constant	0.335	0.065	**	0.205	0.465

*p<0.05, **p<0.01

Table 15. Multiple regression model of the percentage of children receiving needed mental health services

	Outpatient Mental Health					In-home Services				
	(All Children and Youth Aged 2+)					(All Children and Youth Aged 2+)				
	N=63					N=63				
	R ² =0.549					R ² =0.647				
	Coeff.	Std Err.	P> t	95% CI		Coeff.	Std Err.	P> t	95% CI	
Supplement Medicaid (yes/no)	-0.044	0.030		-0.105	0.016	-0.021	0.026		-0.073	0.030
Use of Medicaid EPSDT (yes/no)	0.070	0.031	*	0.007	0.133	0.022	0.020		-0.018	0.063
Total federal funds (\$10,000 per child)	-0.012	0.019		-0.052	0.028	0.025	0.013		0.000	0.050
Local provider availability: % unmet need	0.000	0.001		-0.002	0.003	0.002	0.001	**	0.001	0.004
Non-metro	0.063	0.027	*	0.008	0.117	0.023	0.020		-0.018	0.063
% Children in out-of-home care	0.306	0.082	**	0.143	0.470	0.285	0.064	**	0.157	0.414
% Children without insurance	-0.508	0.205	*	-0.919	-0.098	-0.369	0.227		-0.823	0.086
Constant	0.318	0.053	**	0.213	0.424	0.032	0.050		-0.068	0.132

*p<0.05, **p<0.01

Table 15 (continued). Multiple regression model of the percentage of children receiving needed mental health services

	Counseling for depression				
	(Only Youth Aged 11+)				
	N=63				
	R²=0.621				
	Coeff.	Std Err.	P> t 	95% CI	
Supplement Medicaid (yes/no)	-0.139	0.041	**	-0.222	-0.056
Use of Medicaid EPSDT (yes/no)	0.104	0.037	**	0.028	0.179
Total federal funds (\$10,000 per child)	0.044	0.018	*	0.007	0.080
Local provider availability: % unmet need	-0.001	0.002		-0.004	0.002
Non-metro	0.046	0.031		-0.017	0.108
% Children in out-of-home care	0.431	0.181	*	0.067	0.795
% Children without insurance	-1.174	0.329	**	0.067	0.795
Constant	0.487	0.076	**	0.335	0.639

*p<0.05, **p<0.01

CHAPTER VI: CONCLUSION

The three studies conducted in Chapters III-V examined whether contextual and organizational factors influenced child welfare agencies' ability to facilitate behavioral health and social services for families. Study findings provide support for the application of the ecological perspective to child welfare. The ecological perspective argues that efforts to improve service access for children and families must take into account the different settings in which child welfare services are embedded. Consistent with this perspective, significant associations were found at all three levels of the child welfare agency environment: micro, meso, and macro.

The findings in Chapter III were consistent with previous research suggesting that factors at the micro-level, such as the organizational climate, have a strong influence on individual service outcomes (e.g. Glisson & Green, 2006; Glisson & Hemmelgarn, 1998). In this chapter, I examined how child welfare caseworker role overload moderates associations between child welfare agencies' use of performance-based contracting and the services provided to families. Results suggest that the combination of performance-based contracting and high caseworker role overload is negatively associated with caseworker hours spent on case management, hours of in-home service provision, and the number of social services received by permanent caregivers. In contrast, the combination of performance-based contracting and low caseworker role overload is positively associated with caseworker hours spent on case management, but still negatively associated with hours of in-home service provision. These study findings have two major implications. First, the negative associations between use of performance-based contracting and in-home service provision suggest that additional attention to intact families (i.e. families in which the child is placed in-home) is warranted. Previous research suggests that when children stay home after a substantiated report of abuse or neglect, about half of their families receive no services at all (U.S. Department of Health and Human Services, 2009); the fact that these families are not benefiting from services may account for the lack of

improvement in the frequency and safety of family preservation efforts (Golden, 2009). Second, the negative influence of high caseworker role overload on service outcomes suggests that policy makers and child welfare agency directors implementing performance-based contracts should carefully consider how existing factors within the child welfare agency may distort incentive structures. Caseworkers' perceptions of their working conditions influence their ability to effectively case manage and facilitate service access to children; therefore, efforts at reform that do not take into account caseworkers' caseloads and supervision may have unintended consequences.

Chapter IV focused on factors in the meso-level of the child welfare agency environment. This study examined associations between three dimensions of collaboration between local child welfare and juvenile justice agencies – jurisdiction, shared information systems, and connectivity – and youths' odds of receiving behavioral health services. In this study, having a single agency accountable for youths' care significantly increased youth odds of receiving any behavioral health services. Inter-agency sharing of administrative data increased youth odds of receiving inpatient behavioral health services. In contrast, connectivity – the number of different inter-organizational arrangements between agencies – was not significantly associated with youth service receipt. Study findings support the idea that connections between child welfare agencies and other agencies are critical to improving delivery of health and social services to children and families. However, unlike previous empirical research, which has focused primarily on the impact of inter-organizational arrangements such as joint planning and cross-training (e.g. Bai, et al., 2009; Hurlburt, et al., 2004), the study in Chapter IV demonstrated the importance of clarifying agency accountability and of developing shared data systems to improving service access.

Finally, in Chapter V, I examined associations between a macro-level factor – specifically child welfare agencies' access to and supplementation of Medicaid funding – and children's receipt of mental health assessments and mental health services. In this study, the availability of Medicaid Early Periodic Screening, Diagnosis, and Treatment (EPSDT) dollars was positively associated with children's receipt of mental health assessments and services. However, problems with Medicaid frequently necessitated the use of supplementary child welfare agency funds to pay for care, even for Medicaid-covered children. Inadequate resources are a major constraint for most public service

systems (Golden, 2009). In the current study, when child welfare agencies supplemented Medicaid with child welfare funds, fewer children received mental health services. In contrast, when child welfare agencies were able to use Medicaid EPSDT dollars for mental health purposes, more children received mental health assessments and services. Medicaid EPSDT differs from other public insurance programs because of its expansive definition of “medical necessity” (Rubin, et al., 2005). Recent legislation permits states to substitute “benchmark” plans for standard Medicaid benefit packages. These plans generally contain narrower definitions of “medical necessity” than Medicaid EPSDT (Rosenbaum & Wise, 2007); consequently, without close attention to how these plans are implemented, children’s access to mental health services may not improve.

Cumulatively, the studies in Chapter III-V demonstrate the importance of contextual and organizational factors to individual-level service outcomes. They also highlight the importance of specific factors at three different levels of the child welfare agency environment: organizational climate (micro), collaboration with other agencies (meso), and the local resource context in which these public agencies are embedded (macro). Study findings indicate that factors at all three levels – micro, meso, and macro – are significantly associated with service outcomes and suggest the need for policymakers and child welfare administrators to consider strategies at each level for improving families’ access to services.

Limitations

In addition to the study-specific limitations described in previous chapters, these three studies share a number of limitations. First and foremost, the data only permitted analysis of whether children and families received any health and social services; additional information on the appropriateness, intensity, or adequacy of delivered services was not available. While service receipt is indicative of child welfare agency efforts to promote child and family well-being, the quality and design of services received are important determinants of actual treatment outcomes. Future research could extend the current analyses by examining how contextual and organizational factors influence children and families’ odds of receiving appropriate, and preferably evidence-based, interventions.

Second, the measures of health and social service need and service receipt were all based on reports by caseworkers, caregivers, and/or youth. While previous research has demonstrated the reliability of self-reported data (e.g. Ascher, et al., 1996; Winters, Stinchfield, Henly, & Schwartz, 1990), these data are still subject to recall bias. Conversations with staff at RTI, the institution responsible for collecting the data, also revealed the possibility that caregivers and youth might under-report behavioral health need and service receipt because of: (1) confusion about the nature of services received; and (2) fear of being re-reported to the child welfare agency. To account for this possibility, reports of service receipt were triangulated from multiple sources whenever possible. For example, in Chapter IV, youth need for behavioral health services was assessed by drawing upon caregiver, caseworker, and youth reports.

Finally, the available data may not capture the most recent developments in the field of child welfare. Data on children and caregivers were collected over time, but contextual and organization-level data were only collected once, at baseline (between October 1999 and December 2000). The inability to track child welfare agency-level measures over time was a limitation for all three studies. However, the secondary data used in this study are the only national child welfare data available, and therefore represent the only means of empirically examining the effect of the identified contextual and organizational factors on service outcomes in a large and representative sample of child welfare agencies.

Conclusion

Service receipt is an important facilitator of child and family well-being, and a federal performance outcome that child welfare agencies have traditionally struggled to meet (e.g. McCarthy, et al., 2007). Child welfare policy makers and administrators currently lack empirical guidance on how to successfully implement performance improvement in this area (Courtney, 2000b). Contextual and organizational factors are currently under-examined in the empirical literature. This dissertation project sought to address this gap by applying an ecological perspective to investigate several factors influencing child welfare agencies' ability to facilitate delivery of health and social services to children and their families. Findings from the three studies within this project suggest that child welfare agency

performance is influenced both by intra-organizational determinants (Chapter III) and the interaction of the child welfare agency with its external environment (Chapters IV-V). Child welfare policymakers, administrators, and researchers seeking to improve service access for children and families must consider the context in which these services are embedded, as well as how different levels of child welfare agencies' internal and external environments may interact to influence service use.

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