



# VCU

Virginia Commonwealth University  
VCU Scholars Compass

---

Theses and Dissertations

Graduate School

---

2006

## Factors Associated with Hospital Commitment to Provide Child/ Adolescent Psychiatric Services

Lea Anne Gardner  
*Virginia Commonwealth University*

Follow this and additional works at: <https://scholarscompass.vcu.edu/etd>



Part of the [Health and Medical Administration Commons](#)

© The Author

---

Downloaded from

<https://scholarscompass.vcu.edu/etd/788>

This Dissertation is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact [libcompass@vcu.edu](mailto:libcompass@vcu.edu).

© Lea Anne Gardner 2006

All Rights Reserved

FACTORS ASSOCIATED WITH HOSPITAL COMMITMENT TO THE PROVISION  
OF CHILD/ADOLESCENT PSYCHIATRIC SERVICES

A Dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University.

by

Lea Anne Gardner

Master of Science in Public Health, University of North Carolina, 1989  
Bachelor of Science in Nursing and Psychology, Elmhurst College, 1986

Director: Robert E. Hurley, PhD  
Associate Professor, Health Administration

Virginia Commonwealth University  
Richmond, Virginia  
August, 2006

## Acknowledgements

The achievement of my Ph.D. is an accumulation of help received over the years. First, I want to thank my parents, Betty Grace Drechsel Gardner and Paul John Gardner Sr. (deceased) for their invaluable encouragement and assistance in my education over the years. My father's love of reading and learning has left an indelible impression. I would like to thank my two children, John Matthew Harrell and Jean Elizabeth Harrell. Your unconditional support has turned my goal into a reality. Your ability to adjust to the many changes that occurred with my decision to return to school and pursue my dream is truly appreciated. My desire is to provide the same level of encouragement and assistance in all your future endeavors. A special recognition and thanks is extended to John Matthew Harrell for his immeasurable assistance with computer issues and to Jean Elizabeth Harrell for the many massages. I wish to express my appreciation to my brother Edward Stephen Gardner, wife Sylvia Marguerite Gardner, and sister Janet Marie Kopkowski, for the many supportive hours devoted to me.

Words can not begin to explain the level of gratitude I feel toward my dissertation chair, Dr. Robert E. Hurley. Your wisdom and compassion have helped me grow as a person during the shaping and defining of my dissertation. I believe there is an art to mentoring and guiding a student in a gentle but directed path and you have that remarkable ability. Having you as the chair of my dissertation committee, has been a very rewarding experience.

It has been a pleasure working with each member of my dissertation committee. Each of you has provided different types of individual support. Thank you Dr. Kenneth R. White for your suggestions and the many hours spent reading and critiquing my work which refined and polished this study. Dr. George J. Stukenborg, I want to thank you for your assistance in reading and providing statistical support. Your input improved my understanding of logistic regression analysis. Dr. Larry J. Williams, your help regarding statistical questions and data challenges helped define the analysis which shaped this dissertation.

A special thank you is extended to Mark L. Diana for his assistance with computer and database issues, but more importantly for being a good friend. I also thank the many doctoral students with whom I have had the pleasure of attending classes and from whom I have received help. The faculty at Virginia Commonwealth University has provided assistance and encouragement that has assisted me while moving through the PhD program. Thank you very much. I wish to thank Frank Harrell for broadening my knowledge to the opportunities available in health care research. There are innumerable people who have assisted in many ways. Thank you for your support.

## Table of Contents

	Page
Acknowledgements.....	ii
List of Tables .....	xi
List of Figures .....	xii
Chapter	
1. INTRODUCTION .....	1
Children’s Mental Health .....	2
Evolution of Child Mental Health .....	3
Purpose of Study .....	4
Significance of the Study .....	5
Research Questions .....	6
Conceptual Model .....	7
Overview of Methodology .....	8
Organization of the Dissertation.....	9
2. LITERATURE REVIEW .....	10
Children’s Mental Health .....	10
<i>Children Defined</i> .....	10
<i>Prevalence Rates of Child Mental Illness</i> .....	10
<i>Portals for Access to Mental Health</i> .....	12
Factors Influencing Child Mental Health Service Use .....	12

## Table of Contents (continued)

	Page
<i>Demographics</i> .....	12
<i>Age</i> .....	12
<i>Ethnicity and Race</i> .....	13
<i>Financing Mechanisms</i> .....	15
<i>Public and Private Financing</i> .....	17
<i>Managed Care – Private Insurance</i> .....	18
<i>Managed Care – Public Insurance</i> .....	19
<i>Delivery of Mental Health Services</i> .....	20
<i>Evolution of Psychiatric Hospitals</i> .....	20
<i>Providers of Mental Health Care</i> .....	25
<i>Availability of Service Providers</i> .....	26
<i>Child Residency Programs and Hospitalization Rates</i> .....	26
<i>Hospital-Based Psychiatric Services</i> .....	27
<i>Factors Influencing Provision of Services</i> .....	29
<i>Stigma</i> .....	29
<i>Mission/Ownership Status</i> .....	30
<i>Ownership Status and Psychiatric Care</i> .....	31
<i>Ownership Status and Stigmatized Services</i> .....	31
<i>Community Orientation</i> .....	35
<i>System Affiliation</i> .....	36
<i>Competition and Market Perceptions</i> .....	37

## Table of Contents (continued)

	Page
Summary .....	39
3. THEORETICAL FRAMEWORK .....	40
Resource Dependence Theory .....	41
Institutional Theory .....	44
Application of Theory to Research Questions .....	47
Resource Dependence Theory Based Factors .....	51
<i>Environmental Factors</i> .....	51
<i>Child Psychiatrists</i> .....	51
<i>Psychiatric Hospitals</i> .....	52
<i>Age and Ethnicity</i> .....	52
<i>Socio-economic Status</i> .....	53
<i>Organizational Factors</i> .....	53
<i>System Affiliation</i> .....	53
<i>Medicaid Payer Mix</i> .....	54
<i>Pediatric Residency Programs</i> .....	55
Institutional Theory Based Factors .....	55
<i>Environmental Factors</i> .....	56
<i>Competition</i> .....	56
<i>Community Orientation</i> .....	58



## Table of Contents (continued)

	Page
<i>Organizational Factors</i> .....	59
<i>Ownership Status</i> .....	59
<i>Hospital Specialization</i> .....	60
Summary .....	61
4. METHODOLOGY – RESEARCH DESIGN .....	62
Data Sources .....	62
Sampling Technique .....	64
Variable Measurement .....	65
<i>Dependent Variables</i> .....	65
<i>Independent Variables</i> .....	66
<i>Environmental Factors</i> .....	66
<i>Organizational Factors</i> .....	68
<i>Control Variables</i> .....	71
Analysis .....	71
Limitations.....	73
5. RESULTS .....	75
Study Population .....	75
Missing Data.....	75
Database Selection .....	78
Independent Variables.....	78

## Table of Contents (continued)

	Page
Dependent Variables .....	79
Findings .....	81
<i>Correlations for Large Database</i> .....	81
<i>Descriptive Statistics for the Large Database</i> .....	83
<i>Correlations for Small Database</i> .....	86
<i>Descriptive Statistics for the Smaller Database</i> .....	88
<i>Logistic Regression</i> .....	93
Summary .....	100
6. DISCUSSION .....	101
Research Questions and Conceptual Framework Model .....	101
<i>Resource Dependence Theory</i> .....	102
<i>Institutional Theory</i> .....	102
Hypotheses .....	103
<i>Provision of Child Psychiatric Services</i> .....	104
<i>Resource Dependence Theory</i> .....	104
<i>Environmental Factors</i> .....	104
<i>Organizational Factors</i> .....	105
<i>Institutional Theory</i> .....	106
<i>Environmental Factors</i> .....	106

## Table of Contents (continued)

	Page
<i>Organizational Factors</i> .....	108
<i>Level of Commitment in Providing Child Psychiatric Services</i> .....	109
<i>Resource Dependence Theory</i> .....	110
<i>Environmental Factors</i> .....	110
<i>Organizational Factors</i> .....	111
<i>Institutional Theory</i> .....	112
<i>Environmental Factors</i> .....	112
<i>Organizational Factors</i> .....	114
Implications of the Study .....	115
<i>Managerial Implications</i> .....	115
<i>Policy Implications</i> .....	117
<i>Theoretical Implications</i> .....	119
<i>Methodological Implications</i> .....	119
Limitations .....	121
<i>Design Issues</i> .....	121
<i>Data Issues</i> .....	122
<i>Sample Size</i> .....	122
<i>Measurement Issues</i> .....	123
<i>Analytic Issues</i> .....	124

## Table of Contents (continued)

	Page
Future Research .....	125
Bibliography .....	127
Appendices	
A. Descriptive Statistics for Three Imputation Methods .....	135
B. Correlation Matrix for Variables with No Missing Data .....	136
C. Correlation Matrix for Database with Null Assumption for Missing Community Orientation Data .....	137
D. Logistic Regression – NFP Only Hospitals Providing Child Psychiatric Services.....	138
E. Logistic Regression Analysis for Model with Percentage of NFP Hospital Variable Removed.....	139

## List of Tables

	Page
Table 1: Race/Ethnic Relative Risks for Psychiatric Inpatient Hospitalizations.....	14
Table 2: Environmental and Organizational Factors and Hospital-Based Services .....	50
Table 3: Variables – Dependent, Independent and Control Variables for the Logistic Regression Models.....	69
Table 4: Correlation Matrix for Hospital Commitment to Child Psychiatric Services Variables.....	82
Table 5: Descriptive Statistics for Hospitals Providing Child Psychiatric Services .....	84
Table 6: Children’s Hospitals Decision to Offer Child Psychiatric Services .....	86
Table 7: Correlation Matrix for Hospital Level of Commitment to Provide Child Psychiatric Services Variables.....	87
Table 8: Descriptive Statistics for Level of Child Psychiatric Services Offered.....	89
Table 9: Distribution of Dependent Variable on the Array of Child Psychiatric Services. ....	91
Table 10: Level of Child Psychiatric Service Commitment in Children’s Hospitals. ....	92
Table 11: Logistic Regression Results for Hospitals Providing Child Psychiatric Services.....	94
Table 12: Logistic Regression Results for Level of Child Psychiatric Services Offered.....	99
Table 13: Summary of Hypotheses for Both Sets of Analyses.....	103

## List of Figures

	Page
Figure 1: Conceptual Model of Environmental and Organizational Factors Influence on Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services .....	8
Figure 2: Array of Adult Hospital-Based Psychiatric Services in Community Hospitals .....	28
Figure 3: Conceptual Model for First Level Analysis for Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services.....	48
Figure 4: Conceptual Model for Second Level Analysis for the Level of Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services .....	49
Figure 5: Sampling Schematic for the Identification of Hospitals Providing Child Psychiatric Services Using the AHA Database for First Half of the Study.....	64
Figure 6: Sampling Schematic Identifying Hospital Level of Commitment in the Provision of Child/Adolescent Psychiatric Services for the Second Half of the Study .....	65
Figure 7: Distribution of Six Child/Adolescent Psychiatric Services.....	80
Figure 8: Conceptual Model for Analysis of Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services.....	102

## Abstract

### FACTORS ASSOCIATED WITH HOSPITAL PROVISION OF CHILD/ ADOLESCENT PSYCHIATRIC SERVICES

By Lea Anne Gardner R.N., Ph.D.

A Dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2006

Major Director: Robert E. Hurley PhD  
Associate Professor, Department of Health Administration

General acute care hospitals play a particularly important role in the delivery of children's mental health given the extant lack of alternatives to long term hospitals for patients requiring a restrictive treatment environment (Glieb and Cuellar, 2003). This cross-sectional study identifies environmental and organizational factors associated with general acute care and children's hospitals in the United States that provide hospital-based child/adolescent psychiatric services and the number of services. Two macro-level theories, Resource Dependence Theory and Institutional Theory were used to identify environmental and organizational factors. A nationwide sample of hospitals was drawn from the 2003 AHA annual survey. Data from the 2002 AHA annual survey, Area Resource File and American College of Graduate Medical Education was used for the independent variables. There were three analyses, correlation,

descriptive and logistic regression. Results demonstrate that hospitals in markets with a low percentage of non-white children, higher family median income, high hospital community orientation, and high percentage of not for profit hospitals are more likely to offer child psychiatric services. Organizational factors associated with an increased likelihood to providing child psychiatric services include hospitals identified as Catholic, public or children's and those with a child psychiatric residency program. Three factors were associated with hospitals providing a high number of child psychiatric services and include hospitals in metropolitan statistical areas, system affiliation, and general acute care hospitals. This study demonstrated that 1. large hospitals are more likely to offer child psychiatric services and a high number of services, 2. children's hospitals provide child psychiatric services, but not a high number of them, and 3. hospitals with a high number of service offerings are mainly located in MSA's and more likely to offer outpatient substance abuse services. Significant results were obtained in the analysis of hospital characteristics and the provision of child psychiatric services, but weaker results were observed when analyzing the number of services. Further research is needed to identify factors with stronger associations to the level of service offerings.



## CHAPTER ONE: INTRODUCTION

General acute care hospitals play a particularly important role in the delivery of children's mental health, even in an environment that focuses on outpatient service delivery. Efforts to deinstitutionalize psychiatric patient care and changes in reimbursement incentives have reduced hospital lengths of stay (LOS) (Burns et al., 1999; Glied and Cuellar, 2003), increased hospital severity of patient diagnoses (Mechanic et al., 1998; Glied and Cuellar, 2003), reduced levels of reimbursement (Burns et al., 1999; Dickey et al., 2001), and pushed less restrictive forms of mental health care treatment (Ringel and Sturm, 2001; DHHS, 1999).

Mental health care usually requires lengthy periods of treatment which may have better results if the patient receives support and treatment in a less restrictive setting, their home environment. Shifting patients from an inpatient to an outpatient setting has occurred in both the adult and child psychiatric sector (Leslie et al., 2001; Cuellar et al., 2001). The shifting of people with psychiatric diagnoses from an inpatient to an outpatient setting reflects the movement of less seriously ill patients out of institutional settings (Nicholson et al., 1996; Leslie et al., 2001). One group of children who are seriously emotionally disturbed (SED) require a highly restrictive treatment environment (DHHS, 1999, p. 171). Glied and Cuellar (2003) have identified an extant lack of alternatives to long term hospitals for patients requiring a restrictive treatment

environment. In the absence of alternatives, patients who need an institutional setting will seek care from the most visible source around them, a general hospital (Glieb and Cuellar, 2003). It is noted that children with psychiatric diagnoses who enter a general hospital typically seek crisis care (Glieb and Cuellar, 2003).

Hospitals are moving toward a supportive role within the health care community (Shortell et al., 1995). The current role of the hospital is a peripheral back-stopping role for treating breakdowns in the lines of offense and defense that promote individual and community well-being (Shortell et al., 1995, p. 136). Hospitals that provide these services are an integral component of mental health care (DHHS, 1999, p.171).

The purpose of this study is to assess how environmental and organizational factors influence the range of hospital-based child/adolescent psychiatric services provided in general acute care hospitals. This chapter presents a summary of current trends and issues in mental health for children and general acute care hospitals, a detailed description of the purpose and significance of this study, specific research questions, a conceptual model and a discussion of the research methodology.

### Children's Mental Health

Children's mental health care needs are primarily provided by pediatric and family medicine primary care practitioners (PCPs) (Steinberg et al., 1999). The amount of care provided by pediatric and family PCPs has increased over time following a shift in care previously provided by mental health specialists.

Changes in access to and delivery of mental health care are related to system factors (managed care) rather than clinical factors (Steinberg et al., 1999). Managed care determines who will interact with these children and when and where care will be

provided (Steinberg et al., 1999). Delayed detection and treatment of mental illness in youths leads to displaced mental health utilization in adults (Steinberg et al., 1999).

Current estimates of the proportion of children in the U.S. population with a diagnosable psychiatric disorder range from 18 to 22% (Steinberg et al., 1999; DHHS, 1999) or approximately 1 in 5 children (Steinberg et al., 1999). Approximately 11% have significant functional impairment, which translates into 4 million youth (DHHS, 1999).

Serious Emotionally Disturbed (SED) is a term used to identify children who have been diagnosed with a mental health condition that substantially disrupts the child's ability to function socially, academically, and emotionally. It is not a formal Diagnostic Statistical Manual (DSM-IV) diagnosis but rather a term that has been used within states and at the federal level to identify a population of children with emotional and behavioral problems who have a high need for services (DHHS, 1999, p. 172).

Children's mental health care needs are underserved. In 1982, it was estimated that 2 out of 3 SED children and adolescents did not receive any mental health care services (Knitzer, 1982). Insurance coverage may explain some of the unmet need. SED youths are often without insurance coverage or covered through public insurance (Glieb et al., 1997). Approximately 11.6% of children with SED have private insurance, versus 31.3% of children have Medicaid. Hospitals provide the most accessible form of care for SED children (DHHS, 1999; Knitzer, 1982). The problem is that inpatient psychiatric care for children is the most restrictive and most costly (DHHS, 1999; Knitzer, 1982).

#### Evolution of Child Mental Health

In the 1980s, there was substantial change in the availability of child psychiatric care. During this time, an increase in commercial insurance coverage encouraged the use

of inpatient psychiatric care for children (Burns, 1991). Total expenditures for inpatient psychiatric treatment accounted for over one-half of the \$35 billion dollars spent in 1986 on child mental health services (Burns, 1991; Burns and Taube, 1990).

In the early 1990s reforms were implemented in the form of mental health managed care. The modification in the reimbursement mechanism proved to be an environmental jolt for hospitals that resulted in changes in length of stays (LOS) (Catalano et al., 2000; Nicholson et al., 1996), severity of diagnosis (Mechanic et al., 1998; Glied and Cuellar, 2003), health care expenditures/reimbursements (Catalano et al., 2000; Callahan et al., 1995), and a push towards less restrictive forms of mental health care treatment (Knitzer, 1982; Stroul and Friedman 1986 & 1996).

Given these modifications, one way hospitals can respond is to expand into providing more psychiatric services including ambulatory care services. As hospitals supplement services that are lacking in the community, families and patients will have better support systems.

#### Purpose of the Study

The purpose of this study is to assess how environmental and organizational factors influence the range of hospital-based child/adolescent psychiatric services provided in non-federal general acute care hospitals and children's hospitals. The relationship between children's mental health care services and these factors will be viewed through the use of two theories, resource dependence theory and institutional theory. The goal of the research is to determine if there are any associations between the environmental and organizational factors and child/adolescent psychiatric services provided by non-federal general acute care hospitals and children's hospitals.

No prior study has assessed the relationship between hospital-based children's psychiatric care and the organizational and environmental factors that influence whether hospitals provide psychiatric emergency room care, inpatient hospitalization, outpatient services, partial hospitalization, or substance abuse services.

There are also no prior studies of how hospital-based child/adolescent psychiatric services are related to the concept of 'stigmatization'. A stigma is a spoiled individual social identity (Younger, 1995, p. 62; Goffman, 1963), which leaves the stigmatized individual disqualified from full social acceptance. Psychiatric services have been identified as stigmatized (White et al., 2006; White and Begun 1998/99), but certain hospitals may offer these services to create a stronger image of compassion and commitment to patient care. While several prior studies have examined hospitals that offer under compensated (LeBlanc, 1991; LeBlanc and Hurley, 1995), uncompensated (Schlesinger et al., 1997), and charity care (Clement et al., 2002) and stigmatized services (White et al., 2005; White et al., 2002; White and Begun 1998/99), none of these studies specifically address children's hospital-based psychiatric care.

#### Significance of the Study

This study will assess whether or not organizational and environmental factors influence the provision of child psychiatric services. Knowing more about these relationships is important because most children's mental health care is not provided by psychiatric and psychological clinical specialists in specialty care settings, but instead by primary care providers and community and children's hospitals. The American Hospital Association (2003) currently estimates that there are only 46 children's psychiatric hospitals in the United States.

Until communities provide an adequate number and breadth of children's mental health care specialty outpatient services, hospitals will continue to be a safety net. One way hospitals can adjust to the need for children's mental health care services is to expand the level of ambulatory services, including outpatient psychiatric, substance abuse and partial hospitalization programs.

One issue influencing an administrator's decision to offer these services is the stigma associated with psychiatric illness (Goffman, 1963). Psychiatric services are identified as stigmatized (White et al, 2004; White and Begun 1998/99), but certain hospitals may offer these services to create a stronger image of compassion and commitment to patient care.

By expanding the level of services, hospital leaders can create a new community-centered, population based health care delivery model built on an integrated system of care (Shortell et al., 1995, p. 136). Administrators that choose to offer these services help set a standard of care that includes all potential patients within the community.

This study will apply two macro level organizational theories to help explain potential associations between organizational and environmental factors and hospital that provide these services: Resource Dependence Theory and Institutional Theory.

### Research Questions

This study will assess the relationship between environmental and organizational factors and the type and extent of commitment by hospitals to provide hospital-based child/adolescent psychiatric services. Two different macro organizational theoretical perspectives will be used as the context for understanding this relationship.

The research questions for this study are:

- 1) Which hospital environmental and organizational characteristics are associated with the provision of formalized hospital-based child psychiatric services?
- 2) Which hospital environmental and organizational characteristics are associated with the extent of formalized hospital-based child psychiatric services provided?
- 3) Does Resource Dependence and/or Institutional Theory contribute toward understanding these relationships?

### Conceptual Model

The conceptual model reflects both Resource Dependence Theory and Institutional Theory. These two theories explain two different, but complementary, forces for the acquisition of resources necessary for organizational survival.

Resource dependence theory describes the tangible forces that motivate an organization to offer certain services. Tangible forces in this situation are the financial and patient resources.

Institutional theory, the complement, examines the intangible forces motivating organizations to offer different service lines. Intangible forces are social and cultural beliefs that drive an organization's decisions and formal structure.

These two different motivational perspectives for resource acquisition provide a context for factors that influence hospital administrator decisions to adopt formalized child psychiatric services. The last research question is included to assess the role these two theories play in identifying the factors that influence those decisions. Figure 1 presents the conceptual model.

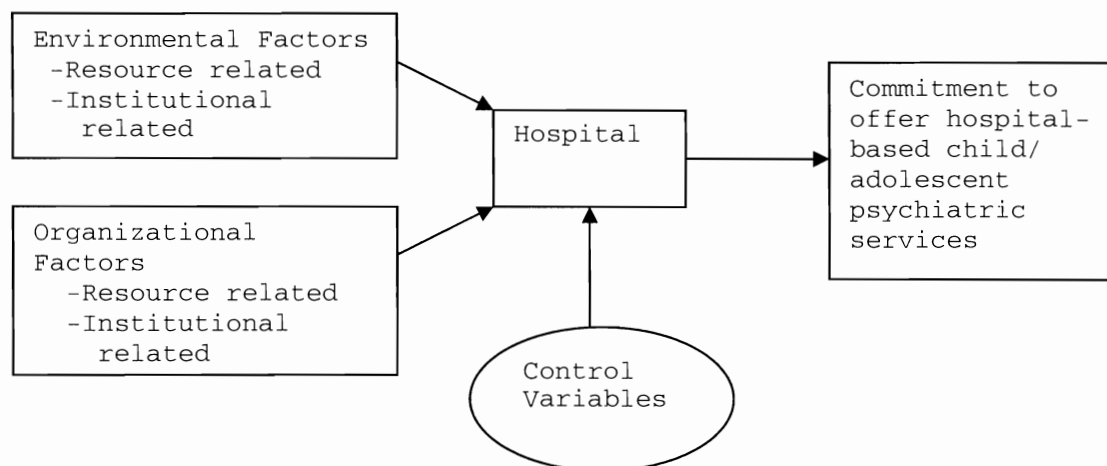


Figure 1. Conceptual Model of Environmental and Organizational Factors Influence on Hospital Commitment to the Provision of Child/ Adolescent Psychiatric Services

#### Overview of the Methodology

This study is a cross-sectional study that utilizes data from the American Hospital Association Survey (AHA) for the years 2002 and 2003. The unit of analysis is the hospital. There are two other data sources, the Area Resource File (ARF) and the American College of Graduate Medical Education (ACGME) child residency program database.

Four analyses are conducted: one descriptive, one correlational, and two multivariate logistic regression analyses. The first logistic regression analysis assesses a hospital's commitment to offering child/adolescent psychiatric services. The second logistic regression analysis assesses a hospital's associations with the level of commitment, utilizing a high versus low distinction, to provide these hospital-based services.



## Organization of the Dissertation

The remainder of this dissertation is organized as follows: Chapter Two presents a literature review that discusses trends in children's mental health services (CMHS), factors associated with the utilization of CMHS and ethnicity, and organizational issues related to undercompensated or stigmatized services. Chapter Three reviews Resource Dependence Theory and Institutional Theory and presents the conceptual model and hypotheses. Chapter Four discusses the methodology of the study, including the research design, data sources, sampling technique, statistical analysis, and limitations. Chapter Five presents the results of the analyses. Chapter Six provides a discussion of the study results.

## CHAPTER TWO: LITERATURE REVIEW

The literature review includes four sections. The first section defines children's mental health by describing its prevalence, and reviewing 'portals of access' where children obtain health care services. The second section discusses factors that influence child mental health service utilization, including demographics and finance issues. The third section reviews the delivery of mental health services, including the evolution of psychiatric hospitals, providers of care, service availability, psychiatric residency training, and hospital-based services. The final section reviews factors that influence the services provided by hospitals, including a discussion of how stigma, mission/ownership, community orientation, system affiliation, and competition influence care delivery.

### Children's Mental Health

#### *Children Defined*

Children are defined as persons who have not reached puberty (Taber's 2004, p. C-54). However, in health care research children are typically defined as persons 20 years old or younger (AHRQ, 2004). The word "child" used in this study refers to children and adolescents 20 years of age or younger, unless otherwise noted.

#### *Prevalence Rates of Child Mental Illness*

Children present a range of behavioral and psychiatric issues, and not all warrant intervention. Some behavioral problems are psychiatric disorders, while others are

identified as sub-threshold disorders (Steinberg et al., 1999). A sub-threshold disorder is a mental health problem that can cause considerable distress to parents and children, but may not reach the level of severity specified for a psychiatric disorder according to the DSM-IV (Steinberg et al., 1999, p.16). Approximately 40% of children have sub-threshold disorders (Steinberg et al., 1999; Costello & Shugart, 1992).

Children with high levels of severity are identified as seriously emotionally disturbed (SED). SED is a term that refers to a person diagnosed with a mental health problem that substantially disrupts the person's ability to function socially, academically, and emotionally. The official definition of children with SED adopted by the Substance Abuse and Mental Health Services Administration (SAMHSA) is "persons from birth up to the age of 18 who currently or at any time during the past year had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within the DSM-III-R and that resulted in functional impairment which substantially interferes with or limits the children's role or functioning in family, school, or community activities" (DHHS, 1999 p. 172; SAMHSA, 1993, p. 29245).

The DSM is used by mental health professionals to convey information to other mental health professionals and to help formulate a diagnosis based on patterns of symptoms (APA, 2005). SED is not a formal DSM-IV diagnosis but rather a term that has been used within states and at the federal level to identify a population of children with emotional and behavioral problems who have a high need for services (DHHS, 1999, p. 172). Mental illness prevalence rates are contingent on the data and definitions used in individual studies. Steinberg et al., (1999) estimated that between 18 and 22% of

children has some form of mental illness defined by the DSM-III and DSM-III-R, based on multiple studies (Costello et al., 1989; Garralda and Bailey, 1986; Bird et al., 1988).

The first Surgeon General's Report (SGR) on mental health emphasized the burden of mental illness and indicates slightly different prevalence rates based on functional status (DHHS, 1999). Functional status or impairment encompasses interactions at home, school and with peers. Diagnosable mental or addictive disorders have at least a minimal impairment estimated of 21% for children 9 to 17 years old (DHHS, 1999, p. 123). The estimate drops to 11% (4 million youth) when the sole criteria of inclusion of significant functional impairment is applied and decreases to 5% when extreme functional impairment is utilized (DHHS, 1999, p. 124).

#### *Portals for Access to Mental Health*

There are four sectors where children enter the mental health care system: the education system, specialty mental health services (psychiatrist, general hospital with a psychiatric unit, psychiatric hospital, and partial hospitalization), the child welfare system, and the juvenile justice system (Burns et al., 1995; Stroul and Friedman, 1996). The educational sector is the biggest entry point to access for mental health services with specialty mental health services being the second most frequent point of entry (Farmer et al., 2003).

#### Factors Influencing Child Mental Health Service Use

##### *Demographics*

##### *Age*

Adolescents are the most likely population to utilize child psychiatric services (Burns, 1991; Ringel and Sturm, 1999; Kiesler and Simpkins, 1991; Chabra et al., 1999).

Chabra et al., (1999) used 1994 California hospital discharge data to determine significant differences in hospitalization rates between age and race/ethnic groups. The study included 27,595 adolescents with 10.8% in the 10-12 year age range, 56.3% in the 13-16 year age range, and 32.9% in the 17-19 year age range (Chabra et al., 1999, p. 352).

### *Ethnicity and Race*

Minorities have less access to care and tend to receive poorer quality mental health services (DHHS, 2001, p. VI). Minority communities suffer a greater burden of disability and consequent loss to overall health and productivity compared to white communities with unmet mental health needs (DHHS, 2001). Barriers that limit minority access to mental health care include the cost of care, societal stigma, fragmented organization of services, issues with clinicians, mistrust of treatment, cultural issues, and historical and present day struggles with racism and discrimination (DHHS, 2001).

The SGR notes that there is a significant relationship between poverty and underutilization of mental health services among minority children and their families (DHHS, 2001). Poverty is also associated with 'dropping out' of services once access is established and also with shorter lengths of stay (DHHS, 1999). Geographic location is also associated with ethnic disparities in utilization, primarily because the majority of Latino and African American persons are located in the South and West regions of the country (Alegria et al., 2002).

The SGR (DHHS, 2001) considers differences for persons in four race groups: African Americans, American Indians/Alaska Natives, Asian Americans/Pacific Islanders, and White Americans. American's of Hispanic origin are included as an ethnic

group, and not as a category of race, following the U.S. Office of Management and Budget (OMB) 1978 designations (DHHS, 2001, p. 5). The identification of Hispanics as an ethnicity and not a race may confound results of studies since the 2000 census which allows more than one ethnicity or race to be identified.

Prior studies have identified two main ethnic groups with significant differences in need and utilization of inpatient child psychiatric care: African Americans and Hispanics (Chabra et al., 1999). African Americans and Hispanics have a higher (11%) compared with whites (9%) and other minorities (7%) (Ringel and Sturm, 2001). However, only one quarter (24%) receive some care (Ringel and Sturm, 2001, p. 323). Hispanics have the highest level of unmet need (87%), followed by African Americans (78%) and whites (69%) (Ringel and Sturm, 2001, p. 323). Table 1 presents the relative risk, by race and ethnicity, of psychiatric hospitalization using 1994 California hospital data (Chabra et al., 1999).

Table 1. Race/Ethnic Relative Risks for Psychiatric Inpatient Hospitalizations

---

Race/Ethnicity	Medi-Cal N = 9,570	Non Medi-Cal N = 17,834
White	1.00	1.00
African American	0.40 (0.38, 0.43)	0.84 (0.80, 0.89)
Latino	0.25 (0.23, 0.26)	0.30 (0.28, 0.31)
Asian/other	0.16 (0.15, 0.18)	0.33 (0.30, 0.35)

---

Chabra et al., 1999, p. 355.

White adolescents account for 68% of inpatient admissions, while Latino and African American adolescents together accounted for 27% (Chabra et al., 1999). The RR of hospitalization for African Americans was 0.77 (95% CI, 0.74 to 0.81), compared to whites (Chabra et al., 1999). The RR for Latinos was 0.32 (95% CI, 0.31 to 0.33) and Asian/other RR was 0.27 (95% CI, 0.26 to 0.29) compared to whites (Chabra et al., 1999). Ethnic differences in inpatient hospitalizations are pronounced when comparing Medi-Cal to non-Medi-Cal adolescents (Chabra et al., 1999). Medi-Cal is the Medicaid program operated by the State of California.

Prior research also indicates that African American children are seen more frequently in residential treatment centers (RTCs) than in inpatient care settings (DHHS, 2001). Two prominent barriers for Hispanic Americans include language barriers and a high rate of uninsured (nearly 1 in 4 uninsured Americans is Latino) (DHHS, 2001, p. 141).

#### *Financing Mechanisms*

Mental health care financing covers an array of services in settings that range from the most restrictive (hospital) setting to the least restrictive (outpatient, community) setting. Hospital care is the most costly (DHHS, 1999; Knitzer, 1982; Burns, 1991). Due to the historic high cost of child inpatient psychiatric care, over time there have been changes in LOS and a shift towards outpatient settings.

Large increases in expenditures for child inpatient psychiatric care occurred in the 1980's, mainly for care provided in private psychiatric hospitals. Advertising for patient recruitment has been identified as a potential reason for the increase in expenditures (Burns, 1991).

The increase in private psychiatric hospitalizations for adolescents represented one half of the \$3.5 billion dollars spent on inpatient child mental health treatment in 1986 (Burns, 1991; Burns and Taube 1990). However, the population covered for these inpatient services did not account for half of all the children receiving any type of mental health services during this time period (Burns, 1991).

Capitation of children's mental health care services began in the early 1990s as a means of controlling costs (Catalano et al., 2000; Norton et al., 1997). Fee for service (FFS) financing encourages providers to increase income by dispensing expensive treatments when less expensive alternatives would be as effective (Catalano et al., 2000, p. 1861). Managed care programs changed incentives by motivating providers to pursue less costly outpatient care for expensive inpatient services (Leslie et al., 2001) and to utilize secondary and tertiary prevention (Catalano et al., 2000).

Changes in the existing reimbursement mechanisms proved to be an environmental jolt to the health care delivery system. An environmental jolt is a sudden and unprecedented event that creates a natural experiment within a group of hospitals (Meyer, 1982, p. 515). The change from fee for service to managed care resulted in hospitals experiencing reductions in lengths of stay (LOS) (Burns et al., 1999; Cuellar et al., 2001; Dickey et al., 2001; Catalano et al., 2000; Nicholson et al., 1996; Callahan et al., 1995; Glied and Cuellar, 2003; Leslie et al., 2001), increased severity of patient diagnoses (Mechanic et al., 1998; Glied and Cuellar, 2003), and reduced health care expenditures/ reimbursements (Burns et al., 1999; Dickey et al., 2001; Catalano et al., 2000; Callahan et al., 1995). These changes also resulted in a push towards less



restrictive forms of mental health care treatment (Burns et al, 1999; Ringel and Sturm, 2001; Norton et al., 1997; Stroul and Friedman 1996; DHHS, 1999).

Eight studies have specifically addressed the financing of child psychiatric services (Leslie et al., 2001; Callahan, et al., 1995; Dickey et al., 2001; Nicholson et al., 1996; Norton et al., 1997; Burns et al., 1999; Catalano et al., 2000; Cuellar et al., 2001). One prior study assessed private insurance (Leslie et al., 2001). The other seven studies have assessed the effects of Medicaid managed care (MMC) compared to a non-MMC control group (Callahan, et al., 1995; Dickey et al., 2001; Nicholson et al., 1996; Norton et al., 1997; Burns et al., 1999; Catalano et al., 2000; Cuellar et al., 2001).

#### *Public and Private Financing*

Inpatient mental health care for children is financed primarily by private insurance and by Medicaid (Burns, 1991; Ringel and Sturm, 2001; Mechanic et al., 1998; Kiesler and Simpkins, 1991; Pottick et al., 1995). The character of insurance coverage provided by Medicaid does vary from state to state, but for children the services tend to be comprehensive and relatively uniform.

Differences between private insurance and Medicaid have decreased as state Medicaid agencies have increased contracting with private organizations for care management and delivery (DHHS, 1999). In the early 1990s, states obtained Medicaid program waivers that increased the number of Medicaid services provided by the private sector (Hurley, 1998). Though Medicaid is a publicly funded system, program waivers and other changes caused state Medicaid programs to be operated more like a privately funded system similar in many ways to the private sector.

The main difference between the two systems is that Medicaid funds long-term services for children who need more intensive or restrictive services, such as those offered through hospitalizations and residential treatments (DHHS, 1999, p. 183). Private insurance companies typically do not cover long-term services. Medicaid funds more care for SED children, while private insurers fund less (DHHS, 1999).

Some child mental health services are funded by State Children Health Insurance Program (SCHIP), which are based on income eligibility. A review of nine state programs found income eligibility requirements ranged from 185% of poverty to no income limitations (The Lewin Group, 1998). Some state programs have established income eligibility at higher income ranges, and have established cost sharing arrangements in which enrollees contribute to the cost of their insurance through premiums and co-payments (The Lewin Group, 1998). The other option when insurance coverage is exhausted is a “spend-down” process, where families have to spend down their financial resources to the point they become eligible for Medicaid (The Lewin Group, 1998). The difference in the proportion of children with SED by payer may be caused by the “spend-down” process, which suggests that current cost cutting measures will work best in the private sector (DHHS, 1999, p. 185).

#### *Managed Care - Private Insurance*

Leslie and researchers (2001) examined private insurance funded mental health service utilization and costs in children between 1993 and 1996, using the Med stat Market scan database, which includes private health insurance claims collected from large employer’s plans. In total, the plans represent over seven million covered lives, of which 139,806 are for children 17 and under. Their results demonstrate that after

implementation of managed care programs, mental health utilization in children 13 to 17 years old increased while utilization in children seven to 12 years old fell slightly, and utilization among children less than seven years old had a substantial drop (Leslie et al., 2001).

Two groups of inpatients experienced an increase in inpatient days. The first group was children with schizophrenia, 23.10 inpatient days in 1993 to 25.28 inpatient days in 1996 (Leslie et al., 2001, p. 121). The second group was children diagnosed with substance abuse (SA). They had an 87% increase ( $p < 0.0001$ ) in inpatient days. The actual inpatient SA LOS increased from 10.47 in 1993 to 19.58 in 1996 along with the costs/day increasing from \$349.05 to \$416.32 (19.3%  $p < 0.0001$ ) and costs/treated patient \$3,224 in 1993 to \$6,083 in 1996 (88.7% increase  $p < 0.0001$ ) (Leslie et al., 2001, p. 121). Inpatient LOS decreased for all other groups.

The only outpatient annual number of treatment days increase was for SA patients, which increased from 5.41 to 6.49 ( $p = 0.0001$ ). Outpatient SA costs per day and costs per treated patient decreased. All other outpatient annual number of treatment days decreased along with costs per day and costs per treated patient.

#### *Managed Care – Public Insurance*

During the managed care era, Medicaid and other public payers of child psychiatric services have decreased LOS (Burns et al., 1999; Cuellar et al., 2001; Norton et al., 1997), decreased discharges (Catalano et al., 2000), reduced total costs (Catalano et al., 2000; Dickey et al., 2001) reduced inpatient costs in capitated groups (Catalano et al., 2000), reduced psychiatric emergency admissions (Nicholson et al., 1996) and increased readmission rates (Callahan et al., 1995).

Publicly funded outpatient utilization has increased (Burns et al., 1999; Catalano et al., 2000; Dickey et al., 2001; Norton et al., 1997) while publicly funded outpatient services for disabled children have decreased (Dickey et al., 2001). Publicly funded hospital services have increased in both the capitated and FFS groups (Burns et al., 1999). The increase may be a substitute for inpatient treatment (Dickey et al., 2001). RTC utilization has also experienced an increase in children in the general population, juvenile justice system and child welfare (Cuellar et al., 2001). Publicly funded prescriptions for medications used in treatment have increased (Norton et al., 1997).

In 1998, \$11.8 billion was spent on children's mental health services of which child inpatient services consumed 33% (Ringel & Sturm, 2001). The 33% consumption for child inpatient services is a proportional decrease compared to one half of the \$3.5 billion reported by Burns (1991). Of the \$11.8 billion allocated to child mental health services, 60% was spent on adolescents which exceeds the actual proportion of the population that children make up 35%. Costs for children aged 6 to 11 are proportionate to the population percentage, 35% of costs to 36% of population. Fifty percent of total costs are attributable to mental health service use of the privately insured (Ringel and Sturm, 2001, p. 331), even though they represent 70% of the insured population. Medicaid accounts for 24% of total costs but represents 16% of the insured population, indicating that Medicaid patients have higher utilization rates and higher costs.

### *Delivery of Mental Health Services*

#### *Evolution of Psychiatric Hospitals*

Psychiatric hospitals have evolved with changes in financial reimbursements and changes in mental health policies. The growth in the number of patients requiring mental

health care increased in the period from 1890 to 1950 (Grob, 1983; Grob, 2000). This growth has been attributed to the changes in reimbursement patterns that resulted in elderly patients being shifted from almshouses to state psychiatric institutions (Grob, 1983; Grob, 2000). The increase in psychiatric patients resulted in an increase in the number of state psychiatric hospitals and a reduction in almshouses.

By the mid-1940s psychiatric hospitals became the main place to stay for the elderly who required custodial care. Patients in state psychiatric hospitals not only were admitted for psychoses, but other people were admitted for identifiable somatic conditions such as senility, cerebral arteriosclerosis, paresis, Huntington's chorea, brain tumors, and other conditions or diagnoses (Grob, 2000). The high number of elderly mentally ill patients requiring custodial care was of growing concern.

World War II proved to be a catalyst for the support of community-based mental health care. Psychiatrists' experiences of soldiers with combat-induced mental illness resulted in six reasons for changes in mental health policy after the war. First was a change in the psychiatrist's focus (Grob, 2000). Psychiatrists were seeking to change their focus towards a psychodynamic and psychoanalytic model emphasizing life experiences and the role of socio-environmental factors. Second, the experiences of World War II appeared to demonstrate the efficacy of community and outpatient treatment of persons with mental illness (Grob, 2000). Mental illness, specifically psychoneurotic disorders, arose from environmental stresses related to combat experiences (Grob, 1991). Direct purposeful interventions such as social support of patients in community settings that provided rest and reduction from the environmental

stress, for these combat-induced psychoneurotic disorders, were shown to alter psychological outcomes (Grob, 1991).

The third reason for change was the belief that early intervention in the community would be effective in preventing subsequent hospitalization became popular (Grob, 2000). The fourth reason: a faith developed that psychiatry could promote prevention by contributing toward the amelioration of social problems that allegedly fostered mental diseases (Grob, 2000). The amelioration of social problems was based on war experiences connected to the control of combat related environmental stress. Psychiatrists discovered the benefit of scheduled breaks from combat duty and the reduction in the number of individuals with a mental illness (Grob, 1991). The information gained from the war was transferred to civilian life. It was believed that institutions such as government, industry, education, religion, and communication possessed sufficient authority to undertake efforts to remove or ameliorate situational stresses that can adversely affect mental health (Grob, 1991, p.19).

The fifth reason related to the introduction of psychological and somatic therapies (including, but not limited to, psychotropic drugs) held out the promise of a more normal existence for patients outside of mental institutions (Grob, 2000). The last reason was an enhanced social welfare role of the federal government not only began to diminish the authority of state governments, but also hastened the transition from an institutionally-based to a community-oriented policy (Grob, 2000, p. 5; Grob, 1991).

Community orientation and prevention programs grew in the 1940s and existed in virtually every state by the 1950s (Grob, 1991, p. 5). As community mental health programs grew in the 1950s, a shift in state mental hospitals occurred as a result of three

changes. The first change was the growth of psychopharmacology and the development of new tranquilizing drugs for the mentally ill (Bloom, 1977, p. 14). The tranquilizing drugs decreased many patient symptoms that allowed for quicker discharges (Bloom, 1977). The second change was the focus on a therapeutic community which fostered patient and staff potential to increase the effectiveness of psychological treatment (Bloom, 1977). The last development occurred by grouping patients in a mental hospital based on the community geographical location of the patient rather than on diagnosis. Patients would be grouped with individuals from their home community (Bloom, 1977).

Between the years 1955 and 1965, there was a 15% decrease in the patient population in psychiatric hospitals (Grob, 1991, p. 254). The succeeding decade had an accelerated rate of reduction, 59% in the number of patients in psychiatric hospitals (Grob, 1991). The accelerated decline in resident population was due to a decrease in the number of aged and chronic patients accompanied with an increase in more short term and intermediate term care and treatment for severely mentally ill patients (Grob, 1991, p. 259). The decrease in the number of elderly and chronic patients is linked with the passage of Medicare and Medicaid which provided stronger financial support for nursing home care over inpatient psychiatric care (Grob, 1991, p. 240). Hence, the decrease in elderly mentally ill patients was not an indication of deinstitutionalization of mental patients into the community setting, but is identified as a lateral shift of patients from one institution to another (Grob, 1991, p. 269).

The 1960s saw an expansion in the community-based mental health care system. In 1961, the Joint Commission on Mental Illness and Health submitted a report: Action for Mental Health. The commission's report was followed two years later by the passage

of the Community Mental Health Centers (CMHC) Act of 1963 (Grob, 2000). The CMHC Act outlined the means for providing community-based mental health care. The presence of community mental health centers initially were thought to have the impact of diminishing sole reliance on state mental hospitals for delivery of mental health care (Grob, 1991).

Instead of diminishing reliance on state mental hospitals, the CHMC Act opened the door to mental health services for a new patient population. The new patient population was individuals with emotional disturbances, not severe mental disorders (Grob, 1994). Community mental health centers were intended to offer an integrated system of care and comprehensive support services, but they rarely achieved this goal (Grob, 1991). These centers neither replaced mental hospitals nor assumed responsibility for providing longitudinal care for discharged or other mentally ill patients (Grob, 1991, p. 239).

Even though the CMHC didn't diminish reliance on psychiatric hospitals, the community orientation of psychiatric care did have an impact on the size and types of mental health organizations offering care. Available data on mental health organizational changes show in 1970 there were 413,066 state and county psychiatric hospital beds, (24-hour hospital and residential treatment beds) which accounted for 78.7% of all psychiatric beds. By 2000, the number of state and county psychiatric beds had dropped to 59,403 or 27.6% (Manderscheid et. al., 2004, p. 247). Translating these figures into the number of 24-hour hospital and residential treatment beds per 100,000 civilian populations in 1970 there were 263.6. This number decreased to 76.8 per 100,000 civilian populations in 2000. The largest decline was in state and county psychiatric



hospitals decreasing from 207.4 per 100,000 in 1970 to 21.2 per 100,000 in 2000 (Manderscheid et al, 2004).

At the same time private psychiatric hospitals and non-Federal general hospitals with separate psychiatric services both increased. Private psychiatric hospital beds increased from 2.7% in 1970 to 12.4% in 2000. Non-Federal general hospitals with separate psychiatric services increased from 4.3% in 1970 to 17.5% in 2000 (Manderscheid et al., 2004, p. 247). The passage of Medicare and Medicaid helped focus inpatient and outpatient psychiatric care to general hospitals and provided reimbursements for community-based services (Grob, 2000; Draper, 2003; Grob, 1991).

#### *Providers of Mental Health Care*

Child Mental Health Care (CMHC) providers are divided into two groups: primary and specialty care. The diagnosis and care of children with mental health care needs are conducted by pediatric and family primary care practitioners (Steinberg et al., 1999). Primary care providers (PCPs) of child mental health services include family practice physicians, pediatricians, school-based clinics and school counselors (Steinberg et al., 1999, p. 3).

The increased use of PCPs has resulted from a shift in psychiatric care away from mental health specialists towards generalists (Steinberg et al., 1999). The shift in care and access is related to system factors (managed care) rather than clinical factors that determine who interacts with whom, along with when and where these children receive care (Steinberg et al., 1999). Specialty mental health care providers include child psychiatrists, psychologists, and social workers. The majority of care delivered by these specialists is in outpatient settings.

*Availability of Service Providers.*

Hospital psychiatric service mix is related to the number of psychiatrists resident in a community. The more psychiatrists practicing in an area, the smaller the array of services in area hospitals and the less likely hospitals are to add (Schlesinger et al., 1997, p. 987). Psychiatrists may also be a substitute for inpatient care (Schlesinger, et al., 1997).

The national distribution of child and adolescent psychiatrists is associated with locality, income and geographical locations (Thomas and Holzer, 1999). The number of child psychiatrists is also associated with the percentage of youth living in poverty. In fifteen states with > 20% of youth living in poverty, the number of psychiatrists per 100,000 youth was < 5.68, with a mean of 3.35 (Thomas and Holzer, 1999). In 10 states with < 13% of youth living in poverty, the number of psychiatrists per 100,000 youth was > 3.69, with a mean of 8.8 (Thomas and Holzer, 1999, p. 11). Counties with greater poverty had fewer child psychiatrists per 100,000 youth than more affluent counties, in each of the 3 years assessed (1985, 1990, and 1994).

The mean number of child psychiatrists per 100,000 youth ranges from 0.0 (rural) to 9.9 (urban) (Thomas and Holzer, 1999). Most rural counties do not have a child psychiatrist, while 84.5% of central metropolitan counties with populations > 1,000,000 had 1 or more child psychiatrists (Thomas and Holzer, 1999).

*Child Residency Programs and Hospitalization Rates*

Hospital teaching status has been identified as a significant predictor in AIDS related service delivery (LeBlanc, 1991; LeBlanc and Hurley, 1995; White and Begun, 1998/99; White, 1996; White et al., 2002; White et al., 2006). In assessing hospital

teaching status a slightly more refined measure was used in a study conducted in New York State (Kanter and Egan, 2003). They assessed whether hospitals with pediatric residency programs provided more pediatric services than general hospitals without a pediatric residency program (Kanter and Egan, 2003, p. 1069).

Hospitals with pediatric residency programs had more hospitalizations, interhospital transfers and the number of hospitals referring transferred patients (Kanter and Egan, 2003, p. 1069). The results demonstrate that “pediatric” hospitals accounted for over 90% of institutions in the top ten percentile of activity by each of these measures (Kanter and Egan, 2003, p. 1070).

The largest single payer of pediatric hospital care statewide was Medicaid with 47.3% of pediatric hospital discharges, compared to commercial insurance at 44% (Kanter and Egan, 2003). In hospitals without a pediatric residency program, commercial insurance provided 53.3% of insurance coverage while public insurance paid 39.2% in 2000 (Kanter and Egan, 2003). The total number of discharges at pediatric hospitals was slightly more (84,599) than double the number of hospital discharges at other hospitals (40,989) (Kanter and Egan, 2003, p. 1070). Pediatric hospitals provided care for two thirds of hospitalized children and for 70% of all pediatric hospital days (Kanter and Egan, 2003, p. 1070).

#### *Hospital-Based Psychiatric Services*

Olfson (1993) used the AHA survey to assess the different types of adult hospital-based psychiatric services. Hospital-based psychiatric services include emergency services (ER), psychiatric units (inpatient psychiatric beds), outpatient psychiatric services, partial hospitalization, outpatient substance abuse and inpatient substance abuse.

The number of community hospitals providing each of the six psychiatric services is shown in Figure 2.

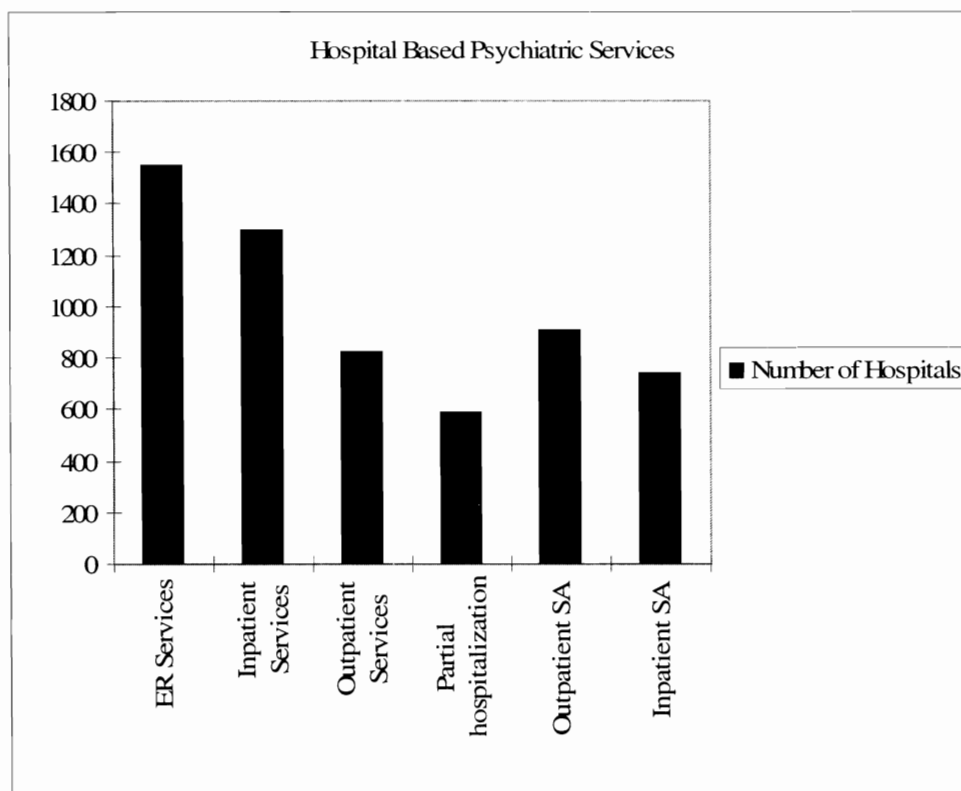


Figure 2. Array of Adult Hospital-Based Psychiatric Services in Community Hospitals (Olfson 1993, p 278).

The most commonly provided psychiatric service is ER services. Public hospitals (in the bed size range from 301 to > 500) provide the most psychiatric inpatient units followed by private non-profits and private for profits (Olfson, 1993, p. 278). More hospitals provide outpatient substance abuse services as opposed to inpatient substance abuse services. This is the only study to assess psychiatric services and the number of hospitals providing each service line. In order to assess hospital commitment when offering services, studies unrelated to psychiatric care are utilized.

The AHA database has been used in previous studies to assess hospital commitment related to HIV/AIDS service delivery (LeBlanc, 1991; LeBlanc and Hurley, 1995; White et al., 2002). Formal service offering is a gauge of hospital commitment to providing specific services.

An important point to remember is “the lack of the provision of formally defined HIV-related services does not necessarily mean that no HIV-related care is being provided or that people with HIV/AIDS are not being treated at a particular hospital. Rather, the provision of formally defined HIV-related services is an important indicator of a hospital's formal response to the epidemic” (White et al., 2002, p. 29).

This statement conveys the reality that not only hospitals with formally identified services may deliver this type of care (White et al., 2002). Hospitals with formal service provision are assumed to be more conspicuous (readily identifiable) by the medical community, therefore more likely to receive a greater number of patients while increasing their risk of becoming stigmatized.

### Factors Influencing Provision of Services

#### *Stigma*

A stigma is a spoiled individual social identity (Younger, 1995, p. 62; Goffman, 1963), which leaves the stigmatized individual disqualified from full social acceptance. Stigmatized individuals may feel ashamed or less likely to seek out care (Sontag, 1989; Younger, 1995). Stigmatization not only affects the individual identity but applies to whole groups of individuals and services.

Psychiatric care is still affected by a stigma (DHHS, 1999; DHHS, 2001; Goffman, 1963; Vaccaro, 2004; White et al., 2002; White et al., 2004; White and Begun,

1998/99) that affects both patients and providers. Both SGR's (DHHS, 1999 and 2001) identify the stigma of psychiatric care as the most formidable obstacle when dealing with mental health and illness. The stigmatization of psychiatric services in the U.S. and other Western nations is common (DHHS, 2001).

Stigmatization may also extend to payment sources, such as Medicaid. Due to the burden associated with a stigma, patients and providers are not the only ones affected by this problem. Hospitals might be reluctant to provide services to stigmatized groups of patients for fear of tarnishing their reputation (LeBlanc, 1991; LeBlanc and Hurley, 1995; White et al., 2002).

Psychiatric and HIV/AIDS services are identified as stigmatized (White et al., 2002; White and Begun 1998/99; White et al., 2004). Still certain hospitals offer these services to create a stronger image of compassion and commitment to patient care. There are a limited number of studies on psychiatric inpatient care and specifically children's inpatient mental health care delivery. Therefore, the organizational factors reviewed in this research are drawn from a broader range of studies that assessed hospital commitment of stigmatized services.

#### *Mission/Ownership Status*

There are three main types of ownership status: investor owned (IO), non profit, and public hospitals. The relationship of ownership status and formalized psychiatric services has been evaluated in two studies (Lyles and Young, 1987; Culhane and Hadley, 1992). The first study used adults (Lyles and Young, 1987) while the second one included children (Culhane and Hadley, 1992). Given the limited number of studies related to psychiatric services, other studies related to ownership status and formalized

service provision of stigmatized services, HIV/AIDS, will be reviewed (LeBlanc, 1991; LeBlanc and Hurley, 1995; White et al., 2002).

#### *Ownership Status and Psychiatric Care*

Lyles and Young (1987) examined ownership status and the relationship of different service mixes on LOS for adult acute inpatient psychiatric services in general hospitals and short-term psychiatric specialty hospitals in California. Length of stay, the dependent variable, was used as a means of gauging costs. Hospitals chosen had to provide hospital-based formalized services available within and outside the hospital. Formalized psychiatric services were used to explain a potential substitution effect between outpatient and inpatient psychiatric care and not as a determinant of hospital commitment. The hospital-based services included outpatient psychiatric clinics, emergency psychiatric services and partial day hospitalization.

Two of the three alternative psychiatric services, psychiatric emergency services and partial hospitalization, were statistically significant in explaining the drop in mean inpatient LOS (Lyles and Young, 1987). Outpatient services had no statistically significant association with inpatient LOS (Lyles and Young, 1987), whereas Schlesinger et al. (1997) noted a substitution effect between inpatient and outpatient services.

Three limitations to Lyles and Young (1987) include the population, adults, data from one state, California, and the use of stepwise regression. The first two limitations reflect concerns over generalizability to children and regional variations. The third limitation is the use of stepwise regression, a procedure that selects variables for a model based on statistical significance a priori, rather than allowing the use of theory to guide

the model. Stepwise regression studies require caution when interpreting results due to the potential of an omitted variable bias.

Culhane and Hadley (1992) assessed differences between for-profit versus not-for-profit freestanding psychiatric inpatient facilities. This is the only study that focuses on psychiatric hospital organizational characteristics and its relationship to children and adolescents. The sample came from the 1983 and 1986 NIMH Inventory of Mental Health Organizations and included only private mental health organizations providing inpatient services in a hospital setting.

The operationalized variables were service mix (an additive index of non-inpatient formalized services including outpatient care, residential treatment, residential supportive care, partial care, and emergency services), accessibility (annual number of emergency visits as a proportion of each facility's bed capacity), client mix (primary diagnoses of mental illness, mental retardation, or substance abuse), and payer mix (Medicare, Medicaid, state - non-Medicaid, client fees/insurance, and other government, foundation support, or those not classified) (Culhane and Hadley, 1992, p. 184).

The results of this study indicate that for-profit psychiatric hospitals provide a limited service mix compared to not-for-profits. For-profits provide services to more child/adolescents, more private insurance patients, have higher lengths of stay and more patients with a diagnosis of substance abuse. Not-for-profits are more dependent on state funding and Medicaid and have a higher level of professional training. These results are limited by the use of pre-managed care data where private insurance was providing the largest amount of financing in a private health care setting.



*Ownership Status and Stigmatized Services*

A related set of studies provide some insight into what factors may be associated with leading hospitals to offer stigmatized services – namely, HIV/AIDS. There are five studies associated with hospital commitment and HIV/AIDS. LeBlanc (1991) and LeBlanc and Hurley (1995) evaluated hospital commitment to the provision of HIV/AIDS care measured by the adoption of formalized HIV-related services. The initial study was conducted during the early period of HIV/AIDS to determine if the adoption of undercompensated and stigmatized services resulted in different patterns and levels of formalized hospital service offerings based on ownership status.

The sample was drawn from the AHA survey data to identify short-term nonfederal hospitals from 1988 and 1991. There were four levels of HIV-related formalized hospital based services used to create a Guttman scale which measured the level of hospital commitment.

The results demonstrate a strong association with not-for-profit hospitals providing the bulk of extensive HIV related services followed by public hospitals. For-profit hospitals provided the smallest amount of extensive services. Other organizational characteristics associated with hospital commitment were medical school affiliation, bed size, and Medicaid funding. A later comparison of HIV-related services, identified as undercompensated and unpopular services, was tested against a well compensated and popular service, cardiac services, resulting in a different pattern (LeBlanc and Hurley, 1995). The distinctly different pattern between the two services is attributed to variations in profitability and social desirability (LeBlanc and Hurley, 1995, p. 888).

A study by White et al., (2002) re-examined the level of commitment to providing HIV-related services for the years of 1988 and 1997 (White et al., 2002). This updated study included the previously significant variables of ownership, size and system affiliation, but also created an index of stigmatized services identified as psychiatric inpatient beds, specialized psychiatric services, alcohol/chemical dependency inpatient beds, and alcohol/dependency outpatient services (White et al., 2002, p. 30). The results confirmed that teaching status and system affiliation have higher response rates of providing formalized HIV-related services.

All three HIV/AIDS studies broke non-profit ownership status into two groups, secular and religious. A distinct pattern between hospital commitment of undercompensated and stigmatized services emerged. Religious non-profit hospitals provided the largest number of undercompensated and stigmatized services (White et al., 2002; White and Begun, 1998/99; White et al., 2006; White, 1996).

Ownership status is significant when evaluating variations in patterns of care for marginalized populations. Marginalized populations are groups identified with a stigma, namely patients with HIV/AIDS and psychiatric disorders. These two populations of patients and associated services are characterized as undercompensated, uncompensated, and stigmatized.

Statistically significant differences between ownership status and provision of undercompensated and stigmatized services have been established (LeBlanc, 1991; LeBlanc and Hurley, 1995; White, 1996; White and Begun, 1998/99; White et al., 2002; White et al., 2006). White and Begun (1998/99) compared Catholic (non-profit religious) hospital ownership status against non-profit secular and for profit hospitals to determine

if differences in mission-driven identity resulted in differences in access, stigmatized, and compassionate care services. An updated version expands the scope of hospitals to include public hospitals, utilize an index for all three types of services and includes the years 1993 and 2001 (White et al., 2004).

The index of stigmatized services covered nine available services, eight were psychiatric related services and one was HIV/AIDS related services (White et al., 2006). The internal consistency of this scale had a Cronbach's alpha of 0.77 in 1993 and 0.78 in 2001 (White et al., 2006).

For profit hospitals registered fewer services in the three dimensions compared to all four hospital categories in both years. The difference in the three types of services was smaller between Catholic hospitals and non-profit hospitals. Overall there was a general drop in the provision of stigmatized services between the years 1993 and 2001. No significant difference was seen in the provision of stigmatized services between Catholic, non-profit and public hospitals in 2001; however, a significant difference was seen between Catholic and for profit hospitals (White et al., 2006).

Organizational characteristics positively associated with providing stigmatized services include hospital bed size and teaching hospital while the average length of stay was negatively associated with stigmatized services for 1993 and 2001 (White et al., 2006). The conclusion is that Catholic hospitals do provide more stigmatized services than other private non profit, public and for profit hospitals (White et al., 2006).

#### *Community Orientation*

Hospitals can demonstrate community support through providing specific services (Proenca et al., 2000). Community orientation is the organization-wide generation,

dissemination, and use of community intelligence to address present and future community health needs (Proenca et al., 2000, p. 1013; Proenca, 1998).

Proenca et al. (2000) tested this concept in a study of 4,578 hospitals. Specific community oriented hospital activities were identified from six AHA survey questions. The activities reflect information about conducting, assessing, and writing plans to determine the level of unmet need, excess or duplicative services in the community, collection and dissemination of reports and coordination among other organizations in the community (Proenca et al., 2000). Hospital organizational characteristics found to be associated with a higher community orientation are size, nonprofit status, system affiliation, and higher level of dependence on managed care (Proenca et al., 2000).

#### *System Affiliation*

System affiliation plays a significant role in studies on hospital commitment (White et al., 2002; LeBlanc, 1991; LeBlanc and Hurley, 1995; White, 1996; White and Begun, 1998/99; White et al., 2006) and diversification of hospital services (Shortell et al., 1987). The growth of hospital systems in the 1980's has been argued as a defense against an increasingly hostile environment but for the most part, they have not fulfilled their original promise (Shortell, 1988, p. 177).

The increasing level of environmental uncertainty has resulted from the lack of a national health care financing system (Shortell, 1988). The presence of multiple levels of third party payers, the introduction of the prospective payment system (PPS), managed care providers, and a wide range of health care professionals makes for a very complex system (Shortell, 1988). The creation of a hospital system provides a type of buffer that insulates the hospital from some of the fluctuations in the market.

System affiliation was thought to reduce hospital costs through the sharing of services in an attempt to avoid or eliminate the duplication of unnecessary but marginally profitable or unprofitable services (Ramirez, 1992, p. 5), but this justification is in dispute today. Centralizing selected healthcare within a single hospital among affiliated hospitals allows the system to provide a service to a small portion of the community while limiting financial risk (Ramirez, 1992).

Centralization of a low-volume service can yield economies of scale that concentrate expertise and improve patient outcomes, which will improve the organizations reputation, thereby allowing it to obtain a larger percentage of the market and increase profit (Ramirez, 1992, p. 8). Other benefits of system affiliation include increased market position, better credit ratings than most independent hospitals, legislative influence, economies of scale and better access to human labor resources (Ramirez, 1992).

System affiliation is associated with ownership status. Catholic hospitals have the highest level of system membership, 83%, for profit hospitals are second, 79%, followed by non-profit hospitals, 43%, and then public hospitals, 19% (White et al., 2006).

#### *Competition and Market Perceptions*

Market competition, perceived or real, influences a hospital's response to service offerings. One way to view competition is through the identification of hospitals by organizational mission. One study of psychiatric hospital competition utilized the concept of pure versus relative altruism to assess whether the presence and number of non-profit hospitals affects access and uncompensated care delivery (Schlesinger et al., 1997).

Pure altruism in a nonprofit hospital assesses their ability to support their organizational mission to provide charity care based in the presence of other nonprofit hospitals in the market. Entry by additional nonprofit hospitals reduces the amount of unmet community need resulting in fewer incentives for the original non-profit hospital to provide uncompensated care (Schlesinger et al. 1997, p. 977).

Conversely, relative altruism states that market entry by new non-profit hospitals requires that existing facilities do more to distinguish themselves as providers of uncompensated care, causing them to increase their treatment of uninsured patients (Schlesinger et al., 1997, p. 977). Therefore, the number of non-profit hospitals in a market will impact the overall provision of uncompensated care. Fewer rival non-profit hospitals in a market lessens the original non-profit hospitals need to demonstrate their community service status resulting in a subsequent decrease in the level of uncompensated care (Schlesinger et al., 1997).

Another more general study of hospital organizational mission and the influence of charity care compared non-price versus price competition (Clement et al., 2002). The basic premise of this study was non-price competition will result in an increase in charity care for both non-profit and for profit hospitals regardless of price. However, the study found that non-price competition did not result in higher levels of charity care among for profit hospitals. Instead these hospitals offered less care (Clement et al., 2002). The same is true for price competition with for profit hospitals. Non-profit and public hospitals were noted to provide greater levels of charity care under conditions of price competition (Clement et al., 2002). The use of non-profit hospitals to support the

community by the provision of charity care allows these organizations to demonstrate their social good to the community (Clement et al., 2002).

### Summary

The consumption of children's mental health inpatient services is affected by many forces, including which providers are delivering them. Previous research suggests that the willingness of a hospital to provide these services is influenced by several factors within and beyond the organization. Hospitals must consider both the resource requirements and consequences of delivering inpatient psychiatric services to children and adolescents. In addition, a decision to provide these services may also have an impact on a hospital's reputation and its role and standing in its community. No previous studies have explicitly explored the set of organizational and environmental factors that influence a hospital's commitment to providing inpatient psychiatric care to children.

The next chapter presents two theories, Resource Dependence Theory and Institutional Theory, which define the tangible and intangible factors that influence the decision to provide these services. The application of these theories is presented within the context of a conceptual model, with hypotheses which characterize the potential influence of each factor.

## CHAPTER THREE: THEORETICAL FRAMEWORK

The research objective of this study is to discern which environmental and organizational factors influence whether hospitals provide child/adolescent psychiatric services, and which influence the number of services offered. The use of these two theories provides a context for the study objectives.

A theory is a statement of relationships between units observed or approximated in the empirical world (Bacharach, 1989, p. 498). The use of constructs and variables, associated with each other by propositions and variables, are expression of hypotheses (Bacharach, 1989). Two macro level organizational theories are applied: Resource Dependence Theory and Institutional Theory.

Resource Dependence Theory and Institutional Theory are used in this study to explain how “organizations embedded in an environment compete not just for resources and customers, but for political power and institutional legitimacy, for social as well as economic fitness” (DiMaggio and Powell, 1991, p. 66). These two macro level organizational theories provide a foundation upon which to view different but complementary perspectives for organizational decisions. The aim of both theories is to explain different motivations for obtaining or maintaining resources necessary for organizational survival.



## Resource Dependence Theory

Resource dependence theory suggests that organizational survival depends on acquiring and maintaining access to resources from the environment (Pfeffer and Salancik, 1978, p. 2). The interaction of organizations with their environment represents an 'open systems' approach to organizational functioning. An open system consists of "organizations with interdependent activities of linking and shifting coalitions of participants; the systems are embedded in dependent or continuing exchanges with and constituted by the environments in which they operate" (Scott 1998, p. 28).

Organizations embedded in an environment are not problematic in and of themselves (Pfeffer and Salancik, 1978). What makes the environment pivotal for an organization is the amount of valued resources available within an environment. Natural variation in the quantity of resources creates uncertainty for organizational resource acquisition. Increased uncertainty of critical resources creates problems for an organization to acquire the necessary resources.

When organizations look to the environment for their resources they are concerned with three main issues: the concentration of power over the resources, the munificence of resources in the environment and the interconnectedness or level of networks of other organizations with the environment (Pfeffer and Salancik, 1978).

Concentration of power is the level of influence exerted on an organization over the environmental resources (Pfeffer and Salancik, 1978). Having a few suppliers that provide resources for a focal organization can produce a great deal of power for the suppliers. Having one organization supplying a single item creates a monopoly power for the supply of that resource. The addition of even one supplier can alter the power

structure and lessen the influence that the initial supplier had over the focal organization. As more suppliers enter the market, greater uncertainty arises for the suppliers but lowers uncertainty for the buyer who now has more than one place to look for resources. The same problem is true for organizations that produce only one item. The addition of another producer can threaten the stability of the product market of the original organization.

Munificence is the availability or scarcity of resources to the organization. Abundant critical resources reduce environmental uncertainty for the organization, while scarce critical resources raise the level of environmental uncertainty for the organization (Pfeffer and Salancik, 1978). Increased uncertainty heightens the organization's dependence on the resource environment. A typical organizational response is to consider alternative means to acquiring the necessary resources.

Interconnectedness among organizations pertains to the complexity of networks between organizations (Pfeffer and Salancik, 1978). Markets with well defined networks or linkages are able to support one another in times of uncertainty which limits the effects of scarce resources.

As organizations acknowledge their dependence on the environment, their task is to manage resource acquisition while maintaining their autonomy. As environmental uncertainty increases and resource acquisition is threatened, it is important for organizations to find a way to limit their dependence and minimize their vulnerability.

Organizational responses to environmental demands include: compliance with the environment, adaptation of the organization and avoidance of the environment (Pfeffer and Salancik, 1978). Compliance has both good and bad points. The good points are the

immediate satisfaction of resource acquisition. The bad point is that once an organization complies, future influences from the environment may expect compliance which can lead the organization to forfeiting some of their autonomy (Pfeffer and Salancik, 1978).

Organizational adaptation to environmental demands can occur by organizational changes to the environment or by attempting to alter their environment to fit their organization (Pfeffer and Salancik, 1978). One way an organization can adapt to the environmental demands is through growth (Pfeffer and Salancik, 1978). Organizational growth is manifested via mergers, vertical, horizontal and diversification (Pfeffer and Salancik, 1978).

Vertical mergers alter the environmental dependence relationship based on contracts with different types of organizations (Pfeffer and Salancik, 1978). Vertically integrated delivery systems, in theory, provide links to a group of network of primary care physicians, specialists, a broad range of facilities and services, mechanism of coordination of care, integration of strategic planning and resource allocation, and integration of financing and delivery systems (Dowling, 2002, p. 222-223).

Horizontal mergers or hospital systems are like organizational mergers intended to gain economies of scale which can increase an organizations power in exchange relationships and reduce uncertainty generated from competition (Pfeffer and Salancik, 1978, p. 114). Reduction of uncertainty increases with the consolidation produced by horizontal mergers that leads to the attainment of control over organizations that would otherwise be their competitors (Pfeffer and Salancik, 1978).

Diversification allows for a type of buffering from environmental uncertainty (Pfeffer and Salancik, 1978). When an organization creates multiple intraorganizational

services or products they increase the number of critical resources needed from the environment. Rather than relying on one specific service or product to maintain organizational survival, utilization of multiple facets spreads the risk of interdependence across the different sectors thereby lowering the risk for resource acquisition.

### Institutional Theory

Institutional theory suggests that environmentally based societal and cultural structures and beliefs influence organizational decision making. Institutional theory holds that cultural norms, beliefs, and rationalized myths pervasive in the environment influence the selection of services and motivate resource acquisition (Meyer and Rowan, 1991).

Institutional forces arise from different types of formal structures (not specific technical aspects) in an organization. The different formal structures come from relational networks, or deeply ingrained and widespread social realities that are not specific written tasks but more rule like behaviors, policies, programs, positions, and procedures that gradually become rationalized myths that mold the organization (Meyer and Rowan, 1991, p. 44).

These rationalized myths eventually evolve into social realities. Once created, these social realities are reinforced by a wide range of people in society (the environment) in which the organization exists. Some of the forces that help form these social realities include public opinion, important constituents, knowledge legitimated through the education system, social prestige, laws, and definitions of negligence and prudence used by the courts (Meyer and Rowan, 1991, p. 44).

As social rules prescribe certain types of behaviors or actions they evolve to the point of gaining value associated with their presence or absence, and are institutionalized. Institutionalized societal rules convey a lot of information about certain actions in a limited amount of time without having to specify exactly who will produce the action (Meyer and Rowan, 1991). Professionals with licensing and certification credentials that demonstrate to those outside the profession a certain level of knowledge and skill to perform certain actions are an example.

Not all social realities are adopted by an organization once they are recognized. There are different times at which organizations adopt these belief systems. Early adopters of an activity occur for the purpose of increasing productive organizational effectiveness (DiMaggio and Powell, 1991). Overtime these behaviors gain legitimacy due to their production efficiency and are adopted by like minded organizations who desire the appearance of being efficient and current in their activities (Meyer and Rowan, 1991). The value placed on certain social and production behaviors increases as does the legitimacy of these actions. Legitimacy of these social norms, behaviors, beliefs, and myths are crucial to their influence on an organization (Meyer and Rowan, 1991). The perception of actions being legitimated motivates organizational adoption.

Over time the institutional forces grow and gain acceptance. Wider acceptance of certain rules and actions brings about a spread in conformity among organizations that further reinforces the legitimacy of the activities which produce organizational stability and resource acquisition (Meyer and Rowan, 1991; Roggenkamp and White, 2001; Roggenkamp et al., 2005). Increased conformity in social or cultural rules leads to isomorphism. Isomorphism is a progression of similar actions or behaviors between

organizations as a consequence of environmental constraints fueling the homogeneity (DiMaggio and Powell, 1991).

DiMaggio and Powell (1991) identify two main types of isomorphism, competitive and institutional. Competitive isomorphism is associated with similar technical production techniques and is reflective more of a Resource Dependence perspective (Hannan and Freeman, 1977; DiMaggio and Powell, 1991). Institutional isomorphism has three different types, coercive, mimetic, and normative (DiMaggio and Powell, 1991).

Coercive isomorphism is created by a sense of force or pressure to conform to certain rules or patterns of behavior (DiMaggio and Powell, 1991). The most obvious type of coercive isomorphism is that which is created by government mandates. Another is a change in the type of health care reimbursement mechanisms. In the 1990's, financing for mental health care changed from a fee for service to a managed care reimbursement mechanism. The biggest change was in the amount of financial reimbursement for inpatient care. The lowered inpatient financial reimbursement has resulted in a pronounced shift from inpatient to outpatient psychiatric care.

Mimetic isomorphism arises in times of organizational uncertainty. DiMaggio and Powell (1991, p. 70) identify modeling of one organization to assume similar behaviors of another organization as a response to uncertainty. The aim of this type of homogeneity focuses on looking at their successful competitor to see what they are doing as a means of providing an explanation for this level of success (DiMaggio and Powell, 1991). The benefit of modeling oneself after another is being able to try new ideas that

appear to be beneficial without necessarily investing the time and expense to evaluate such an action.

Normative isomorphism comes from professionals who create a standard based on their formal education and professional networks and organizations that surround them (DiMaggio and Powell, 1991). The homogenization of professionals arises from specific rules of conduct coupled with restrictions in entry and exit into professional circles (DiMaggio and Powell, 1991). These rules are reinforced by the organizations that hire them and the participants that understand the rules associated with their professional roles.

#### Application of Theory to Research Questions

The purpose of this research is to determine what factors or characteristics influence the number and type of child mental health care services provided by a hospital. The decision surrounding the range of services to offer rests both on environmental (community) and organizational (institutional) factors.

The use of two macro level organizational behavioral theories helps develop a robust model that provides a more comprehensive perspective when evaluating the factors associated with the provision and diversification of hospital-based child psychiatric services. The environmental and organizational factors are divided into two groups: resource dependent (technical) and institutional (cultural).

The conceptual model will be presented to visualize the two theories that emphasize the influence of environmental and organizational factors on hospitals along with the control variables. The first presentation will show the environmental factors, organizational factors and control variables influence on a hospitals commitment to the

provision of child/adolescent psychiatric services. Figure 3 shows the conceptual model related to hospital commitment to provide child/adolescent psychiatric services.

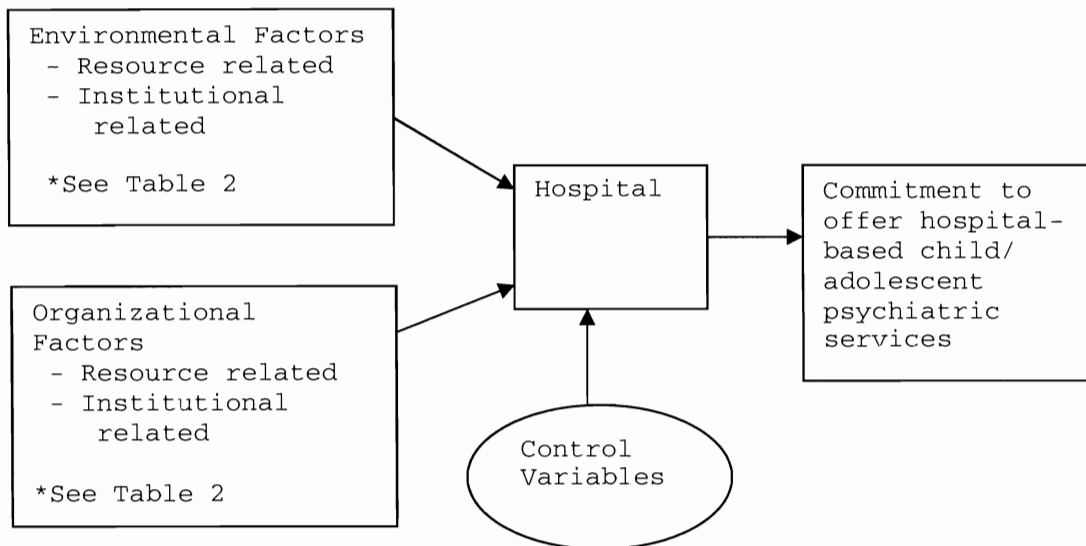


Figure 3. Conceptual Model for First Level of Analysis for Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services

The next diagram presents the second analysis of the environmental factors, organizational factors and control variables as they influence a hospital's level or range of commitment when providing child/adolescent psychiatric services. The dependent variable in this model includes hospitals that offer child/adolescent psychiatric services. Figure 4 shows the conceptual model related to the level of commitment for hospitals providing child/adolescent psychiatric services.



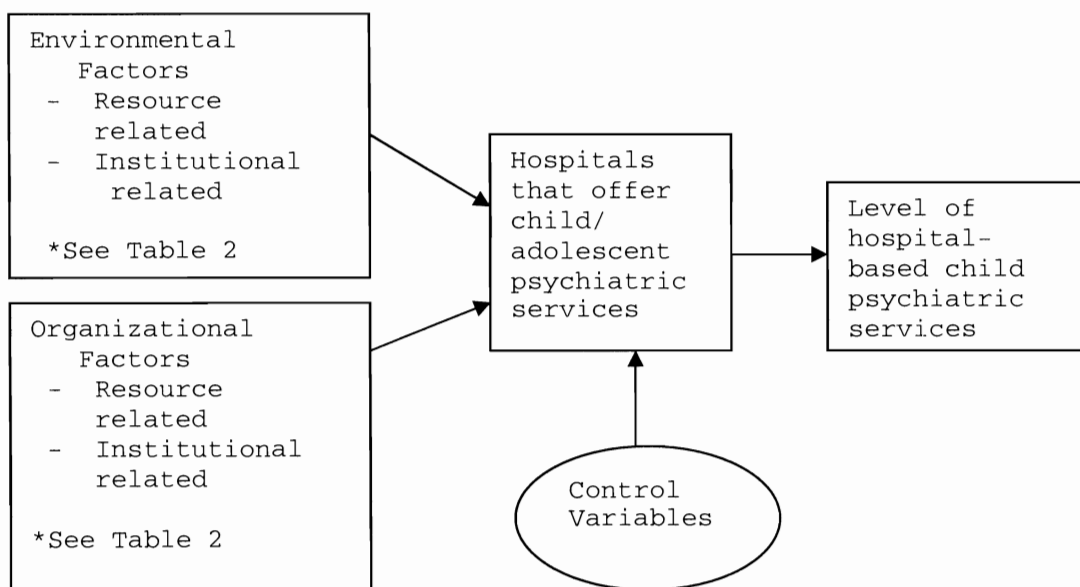


Figure 4. Conceptual Model for Second Level of Analysis for the Level of Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services

The specific independent variables are classified as environmental factors, organizational factors, and control variables. The independent variables are further subdivided based on the theoretical model. There are two dependent variables. The first dependent variable is utilized for the analysis of hospital commitment to providing child psychiatric services. The first dependent variable uses all hospitals in the sample. The second dependent variable is constructed for the analysis of the level of commitment in providing child psychiatric services. These hospitals are a subset of the larger database and are classified based on the number of child psychiatric services offered. Table 2 presents definitions of the dependent, independent and control variables.

Table 2. Environmental and Organizational Factors and Hospital-Based Services

	Resource Dependence Theory (RD)(Technical)	Institutional Theory (IT)
Environmental Factors	Child psychiatrists in the market	Competition (Herfindahl index)
	Presence of psychiatric hospital both child & adult	Mimetic Isomorphism – Percentage of non-profit hospitals in a market
	Ethnicity of children and adolescents in community	Community Orientation – additive scale of 6 hospital comm. Oriented measures
	Socio-economic status of community	Rural versus MSA
Organizational Factors	System affiliation	Ownership status – 1. Investor owned (IO) 2. Non-profit secular (Secular) 3. Non-profit religious (Catholic) 4. Public (Public)
	Hospital Medicaid payer mix	General vs. Specialty Specialty is children's Hospital
	Child psychiatric residency programs	
Control Variables	Emergency Room (ER)	
	Occupancy Rate	
	Hospital Size	
Dependent Variable		Measurement
A. First Model:		Commitment to offer hospital-based child/adolescent psychiatric services
B. Second Model: 1. High = 4 to 6 services 2. Low = 1 to 3 services		Hospital-based child/adolescent psychiatric services 1. Psych inpatient services 2. Psych ER services 3. Psych outpatient services 4. Psych partial hospitalization 5. Outpatient substance abuse services 6. Inpatient substance abuse services

## Resource Dependence Theory Based Factors

Environmental factors suggested by resource dependence theory include availability of child psychiatrists, presence of child and general psychiatric hospitals, ethnicity of community children, community income level (socio-economic status – SES). Organizational factors include system affiliation, inpatient service mix, hospital payer mix, and child psychiatric residency programs.

### *Environmental Factors*

#### *Child Psychiatrists*

Child psychiatrists locate in more affluent areas (Thomas and Holzer, 1999) to seek out more private pay and private insurance patients. Areas with more affluent clients may be areas where non-profit and public hospitals wouldn't necessarily locate (Clement et al., 2002). Even if hospitals do locate in more affluent areas, these hospitals are not going to see as many private insurance inpatient child psychiatric patients, because Medicaid patients receive more inpatient care than private insurance patients (Ringel and Sturm, 1998).

Currently, Medicaid pays the largest component of inpatient child psychiatric care and private insurance patients pay the second largest component (Ringel and Sturm, 1998). If child psychiatrists locate in more affluent areas, they will be a substitute for some of the private insurance patients and not the Medicaid patients. Therefore, child psychiatrists can be an indicator of potential child psychiatric patient munificence.

H1a: Child psychiatrists in a market will be associated with a hospitals' commitment to provide hospital-based child psychiatric services.

H1b: Child psychiatrists in a market will be associated with a hospitals' decision to provide a high level of hospital-based child psychiatric services.

### *Psychiatric Hospitals*

Child psychiatric and psychiatric hospitals are usually private organizations that increased in number during the 1980s due to an increase in private insurance coverage for mental health services (Burns, 1991). These organizations are then assumed to be influenced more by the level of private insurance payment. Currently private insurance has reduced their coverage with the resulting decrease in the total inpatient stays (Ringel and Sturm, 1998). As a result, markets that have child and general psychiatric hospitals are an indication of financial and patient munificence.

H2a: Presence of a psychiatric or child psychiatric hospital in a market will be associated with a hospital's commitment to provide child psychiatric services.

H2b: Presence of a psychiatric or child psychiatric hospital in a market will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services.

### *Age and Ethnicity*

Concentration of adolescents in the community is an indicator of potential demand. Adolescents are the highest users of child psychiatric inpatients (Burns, 1991; Ringel and Sturm, 1999; Kiesler and Simpkins, 1991; Chabra et al., 1999). In addition to adolescents, certain ethnic groups of children use specific types of services more frequently than other groups. Latino, African American, and Asian American adolescents use less inpatient hospitalizations than white adolescents (Chabra et al., 1999).

H3a: Ethnic children and adolescents in a community will be associated with no hospital commitment to provide hospital-based child psychiatric services.

H3b: Ethnic children and adolescents in a community will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services.

#### *Socio-Economic Status*

Socio-economic status is well-defined in the literature as a motivator for service use (LeBlanc, 1991; Alegria et al., 2002; Clement et al., 2002; White et al., 2004; Kataoka et al., 2002; DHHS 1999; DHHS, 2001) and provider location (Thomas and Holzer, 1999). People with a higher socio-economic status are more likely to have insurance coverage and use more mental health services. People with lower levels of financial resources will have less reserves resulting in a lower consumption of services and resources (Alegria et al., 2002).

H4a: Low community SES will be associated with no hospital commitment to provide hospital-based child psychiatric services.

H4b: Low community SES will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services.

#### *Organizational Factors*

##### *System Affiliation*

System affiliation has been shown to strongly influence the diversification of services (Shortell et al., 1987), charity services (Clement et al., 2002; Shortell et al., 1987; Schlesinger et al., 1997), and less desirable services (LeBlanc, 1991; LeBlanc and Hurley, 1995; Shortell et al., 1987; White et al., 2002; White, 1996; White and Begun,

1998/99; White et al., 2006). System affiliated hospitals are designed to be consolidated, stable organizational units meant to insulate themselves from environmental uncertainty.

Hospital systems have a broader base of support that allows more opportunities for service expansion (Proenca et al., 2000; Shortell et al., 1987; Shortell et al., 1995). When a system chooses to offer more risky (stigmatized or marginalized) services, the system can place the service inside one hospital (Shortell et al., 1995; Shortell et al., 1987). This type of strategy allows the enhancement of a hospital's image within the community by offering a less desirable service while spreading the financial risk across all hospitals in the system (Shortell et al., 1995; Proenca et al., 2000; Shortell et al., 1987).

H5a: System affiliation is associated with a hospital's commitment to provide hospital-based child psychiatric services.

H5b: System affiliation is associated with a hospital's decision to provide a high level of hospital-based child psychiatric services.

#### *Medicaid Payer Mix*

Certain hospitals cater to specific payer types (Shortell et al., 1987; Clement et al., 2002; Schlesinger et al., 1997; Lyles and Young, 1987). For profit hospitals have higher levels of commercial insurers (Burns, 1991; Mechanic et al., 1998; Clement et al., 2002). Public hospitals deliver care to more public insurers (Mechanic et al., 1998; Clement et al., 2002).

The consideration of a service can be based on the attractiveness of reimbursement and how it matches their overall payer mix (Lyles and Young, 1987; LeBlanc, 1991; LeBlanc and Hurley, 1995; White et al., 2006; White and Begun,

1998/99). A study by Shortell et al. (1987) found that higher Medicaid payment and eligibility was positively associated with unprofitable services (Shortell et al., 1987). Currently, stigmatized or unprofitable services have the potential to degrade a hospital's image, based on their current payer mix which can negatively influence delivery of this service.

H6a: Hospitals with a higher percentage of Medicaid patients will be associated with a commitment to provide hospital-based child psychiatric services.

H6b: Hospitals with a higher percentage of Medicaid patients will be associated with a decision to offer a high level of hospital-based child psychiatric services.

#### *Pediatric Residency Programs*

The last variable is hospital teaching status. In this study, a more refined measure, child psychiatric residency training programs will be utilized. Pediatric hospitalizations are more frequent in hospitals with a pediatric residency program (Kanter and Egan, 2003). Hospitals that provide child psychiatric residency training programs would be the most likely to have a broader range of hospital-based child psychiatric services.

H7a: Child psychiatric residency training programs will be associated with a hospital's commitment to provide hospital-based child psychiatric services.

H7b: Presence of a child psychiatric residency training program will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services.

#### Institutional Theory Based Factors

The second part of the conceptual model will utilize institutional theory and the influence of intangible social conditions that affect both environmental and organizational issues to potentially define expectations. Institutional factors influence the kinds of actions an organization is likely to adopt even if the action is not efficient (Meyer and Rowan, 1991). These factors are intangible social conditions that help to define expectations.

There are three environmental factors that are institutional influences: competition, mimetic isomorphic forces, and community orientation. Organizational institutional factors include hospital ownership status and general versus specialty hospitals (general children's hospitals).

### *Environmental Factors*

#### *Competition*

Competition in this study will be assessed using two different measures. The first measure of competition will be the use of the Herfindahl index. This index measures the number of hospitals in the market. Child psychiatric services are a specialized service and fewer hospitals will be associated with offer this service in the presence of competition for these patients.

H8a: Competition will be associated with no hospital commitment to provide hospital-based child psychiatric services.

H8b: Competition will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services.

Competition will also be defined as an intangible institutional factor based on a hospital's perception of its rivals. Rivals here imply similar organizations based on



mission. The concept of a rival is congruent with the institutional theory concept of mimetic isomorphism.

Mimetic isomorphism arises in times of organizational uncertainty. DiMaggio and Powell (1991, p. 70) identify modeling of one organization to assume similar behaviors of another organization as a response to uncertainty. Mimetic isomorphism is assumed here to be influenced by the organizational mission or status and the expectations based on this mission.

Prior studies indicate that for profit hospitals are not influenced by the presence of non-profit hospitals when determining the delivery of charity care (Clement et al., 2002). For-profit hospitals offer less charitable care in the presence of non-profit hospitals, particularly when the non-profit hospitals provide more charitable care (Clement et al., 2002, p. 75).

According to Schlesinger et al., (1997) ownership mix affects uncompensated care. Areas with private hospitals provide more uncompensated care, whereas the presence of a public hospital in a market lowers the level of uncompensated care (Schlesinger et al., 1997, p. 986). Non-profit and for profit hospitals both provide less care to indigent patients than did public hospitals (Schlesinger et al., 1997).

Non-profit hospitals provided significantly more uncompensated care than for profit hospitals (Schlesinger et al., 1997). As competition grows, uncompensated care in general decreased, but general non-profit hospitals were less responsive to competitive pressures. It is for this reason that a measure of competition based on the number of non-profit hospitals will be incorporated into this model.

H9a: The percentage of NFP hospitals in a market will be associated with no hospital commitment to provide hospital-based child psychiatric services.

H9b: The percentage of NFP hospitals in a market will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services.

### *Community Orientation*

The last environmental institutionally based factor is the hospital's ability to present a community orientation. This type of orientation uses outreach and marketing to inform the community about the hospital's concern and attention to the community's well-being.

Proenca et al. (2000) conceptualized community orientation based on a 6 item scale created using AHA data. The scale assesses whether a hospital reaches out into the community and is able to utilize the information and resources to broaden its focus (Proenca et al., 2000). Community orientation is pivotal to assessing psychiatric care given the major emphasis on outpatient and community level services.

Another way to assess community orientation is by location, rural versus urban. Absent or low levels of psychiatric community service provide the hospital with an opportunity to fill these gaps in services. Rural areas are noted for having fewer psychiatric resources in the community (Thomas and Holzer, 1999).

H10a: Community orientation will be associated with a hospital's commitment to provide hospital-based child psychiatric services.

H10b: Rural hospitals will be associated with a commitment to provide hospital-based child psychiatric services.

H10c: Community orientation will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services.

H10d: Rural hospitals will be associated with a decision to provide a high level of hospital-based child psychiatric services.

### *Organizational Factors*

#### *Ownership Status*

Ownership status is a significant predictor of organizational response, whether hospital services are identified as undercompensated (LeBlanc 1991; LeBlanc and Hurley, 1995), uncompensated (Schlesinger et al., 1997), or stigmatized (White and Begun, 1998/99; White et al., 2006). Non-profit hospitals particularly Catholic hospitals have been shown to provide the highest level of services to psychiatric patients (White 1996; White and Begun, 1998/99; White et al., 2002; White et al. 2006). In some studies, public hospitals provide higher levels of uncompensated care (Schlesinger, et al., 1997; Lyles and Young, 1987).

White and Begun (1998/99) examined whether Catholic hospitals differed by services provided to the community based on their mission statement. Greater access to care, stigmatized services, and compassionate care services were found in Catholic hospitals versus non-profit and for profit hospitals. An updated study demonstrates that Catholic hospitals still provide the highest level of access, and more stigmatized and compassionate care services, although non-profit secular hospitals were close in the level of services they provided. Public hospitals had the third highest level of services provided to the population with for-profit hospitals having the lowest level of service provision.

Catholic hospitals currently provide the highest level of psychiatric services followed by non-profit hospitals, public hospitals and for-profits (White and Begun, 1998/99; White et al., 2002; White et al., 2006). The provision of these services is a response to the religious mission of Catholic hospitals, which overrides potential alternative allocations of services that generate more profit.

The last ownership status is public hospitals. These are government run facilities that provide care to all who come to their doors regardless of their ability to pay. It is well known that public hospitals carry the burden of charity care. Assessing the organizational mission offers insight into institutional forces that can influence whether hospitals offer child psychiatric services.

H1 1a: Catholic hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals.

H1 1b: Secular non-profit hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals.

H1 1c: Public hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals.

H1 1d: Catholic hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals.

H1 1e: Secular non-profit hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals.

H1 1f: Public hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals.

*Hospital Specialization*

Hospital specialization can impact a market by meeting a specific niche.

Children's hospitals are specialized hospitals that provide care to children regardless of the diagnosis. Their level of specialization implies that all types of services, popular and unpopular services will be offered.

There are no studies currently on whether these hospitals provide child psychiatric services. It is presumed that based on their organizational mission to provide comprehensive care to this population and their higher than normal level of Medicaid patients, children's hospitals will offer these services.

H12a: Children's hospitals will be associated with a greater commitment to hospital-based child psychiatric services than acute care general hospitals.

H12b: Children's hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than acute care general hospitals.

### Summary

There are many factors to consider when assessing possible associations of environmental and organizational factors with a hospital's decision to provide a narrow range of child services. These two theoretical perspectives focus on the technical and institutional forces that can influence a hospital's decisions.

Environmental child psychiatric service factors that are technically based include the number of child psychiatrists in the market, the number of children based on ethnicity in the market, and the SES status of the local market. The institutionally based environmental factors include two measures of competition and community orientation.

Organizational technical influences include system affiliation, hospital Medicaid payer mix, and child psychiatric residency training programs. The organizational

institutional influences include ownership status and general versus specialty (children's) hospital.

## CHAPTER FOUR: METHODOLOGY – RESEARCH DESIGN

The research design for this study is non-experimental, correlational and cross-sectional and includes multivariable models that assess how environmental and organizational factors influence the range of hospital-based child/adolescent psychiatric services provided in general acute care hospitals. Analysis of correlation is included as an exploratory component that addresses the relationships of interest in the research, assuming that variations in the independent variable have already occurred. (Polit and Hungler, 1999, p. 194). The correlation analysis assesses associations between variables without inference about causation (Polit and Hungler, 1999).

In the multivariable models, the temporal order between the independent variables and the dependent variable, hospital commitment, is ensured by defining the dependent variables using only hospital data from 2003. The independent variables are defined using data from the previous year, 2002. Using data for the independent variables from the previous year assumes that hospital administrators incorporate this information to define subsequent decisions.

### Data Sources

The main data source for this study is the American Hospital Association (AHA) survey of hospitals for the years 2002 and 2003. The AHA survey contains information on organizational characteristics, such as formalized service offerings and system

affiliations, financial information, managed care information, staffing, and market characteristics. The AHA survey provides nationwide information on acute care general non-federal hospitals in the United States.

The AHA 2003 database is used to identify hospitals that provide child adolescent services and to identify the type and number of hospital-based child psychiatric services offered. The AHA 2002 database is used to identify the following independent variables: psychiatric hospitals, ownership status, community orientation, system affiliation, hospital Medicaid payer mix, children's freestanding hospitals, hospital size, occupancy rate and presence of an emergency room.

The Area Resource File (ARF) is a national county level data set with information about health statistics, economic activity, socio-economic, and environmental characteristics (ARF, 2005). Socio-economic status and ethnicity information for each county is based on the 2000 census, and the child psychiatric data are from 2001. Original sources for data in the ARF include the National Center for Health Statistics, the AHA, and the American Medical Association (ARF, 2005). In this study, ARF information is county level and is merged by county to hospitals identified in the AHA database.

Data for child psychiatric residency programs is obtained from the book by the American College of Graduate Medical Education for the year 2002. This book provides a list of all hospitals nationwide that offer child psychiatric programs. The National Association of Children's Hospital and Related Institutions (NACHRI) website will be used to identify children's hospitals within a hospital.



### Sampling Technique

Hospitals are the unit of analysis. The sample of hospitals is drawn from the AHA database utilizing only acute care non-federal community hospitals. Long-term, certain specialty, and all federal hospitals are excluded. Figure 5 presents a schematic representation of the sampling technique for the first half of the study.

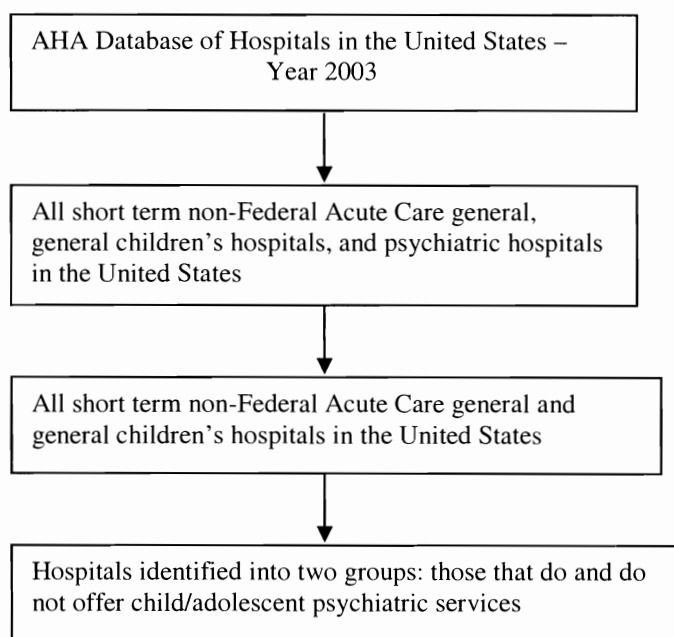


Figure 5. Sampling Schematic for the Identification of Hospitals Providing Child Psychiatric Services Using the AHA Database for First Half of the Study

A second smaller sample of hospitals providing child/adolescent psychiatric services is identified and differentiated into hospitals with a low level of commitment versus hospitals with a high level of services. Low versus high level of services is defined using an additive scale that includes six services. This second smaller sample answers the second research question about which factors, both environmental and organizational, are associated with the level or number of child/adolescent psychiatric

services. Figure 6 presents the schematic representation of the sampling technique for the second half of the study.

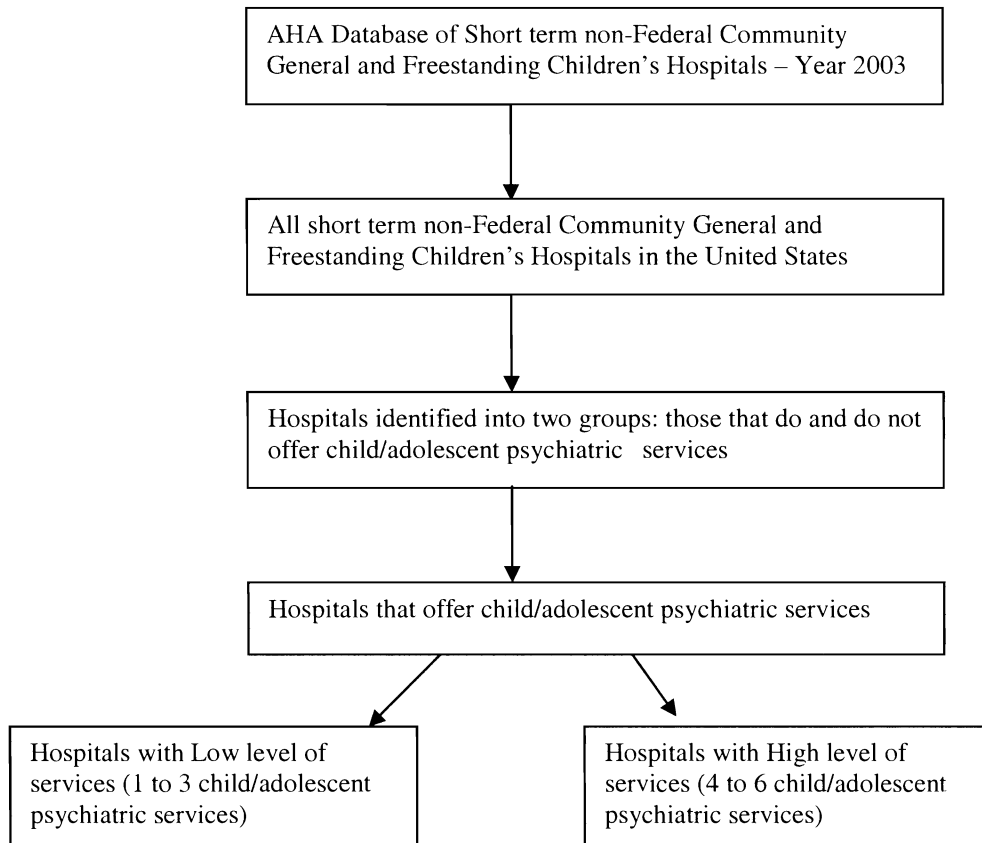


Figure 6. Sampling Schematic Identifying Hospital Level of Commitment in the Provision of Child/Adolescent Psychiatric Services for the Second Half of the Study

#### Variable Measurement

##### *Dependent Variables*

There are two dependent variables, both of which are binary. The first dependent variable, Psychahos, reflects all hospitals nationwide that either offer or do not offer child/adolescent psychiatric services and answers the first research question. The

Psychahos measure is from the AHA database question that asks whether the hospital provides child and adolescent psychiatric services. The answer to this question is binary, 0=no, 1=yes. No commitment includes hospitals in the market that indicate no child/adolescent psychiatric services on the AHA psychahos question.

The second dependent variable, hospital commitment (HCOMIT) is an aggregated binary variable created with an additive scale. The additive scale uses 6 psychiatric service offerings, psychiatric care within a hospital (psyhos), psychiatric emergency services (psyemhos), psychiatric outpatient services (psyophos), partial hospitalization program (psyphhos), outpatient substance abuse (alcophos) and inpatient substance abuse (alcohos). This dependent variable is used to answer the second research question.

A Guttman scale was considered to identify the level of intensity similar to LeBlanc (1991), but was deemed to be inappropriate due to data distributions. A simple grouping of services based on the number of actual and reported services will be created to identify high versus low level of commitment. High level of commitment will include hospitals with four or more services. Low level of commitment will be three or less services offered. A further analysis will be conducted to determine the final selection of high and low commitment grouping.

### *Independent Variables*

Ten independent variables are included in the analysis, grouped into environmental and organizational factors. Each independent variable will be described.

#### *Environmental Factors*

The number of child psychiatrists in the county (Psychmd) is measured by the number per 100,000 youth population. The ARF provides this measure.

The number of Psychiatric hospitals (Psychosp) measure includes both general psychiatric hospitals that acknowledge child/adolescent psychiatric services present and children psychiatric hospitals. Both measures come from the AHA database.

Community Ethnicity (CEthnic) reflects the ethnic diversity of children within a market. This measure reflects the level of white, African American and Hispanic children within the hospital market.

Socio-Economic Status (SES) is measured by the median family income. Family median income was chosen over wage index to reflect the level of financial resources within a community. SES comes from the ARF.

Competition (Comp) is measured using the Herfindahl Index. The number reflects the level of competition in a market based on a range from zero (perfect competition) to a one (a monopoly).

Mimetic Isomorphism (Prctnfp) is defined as the percentage of not for profit hospitals within a market. Non-profits are used as the comparison group due to their mission to provide community service. The actual percentage of non-profit hospitals includes secular, Catholic and public hospitals. The creation of this variable is based on the percentage of not for profit hospitals identified within a county.

Community Orientation (Corient) is an aggregated variable based on the number of six possible responses of hospital-based community oriented questions in the AHA database. The sum of these six questions will be used to create a score that measures the level of community orientation.

Metropolitan Statistical Area versus non-MSA (MSA) is a binary variable which classifies counties as MSA versus non-MSA. Data for this variable are aggregated from

the ARF which categorizes MSA/non-MSA into 5 groups. The four individual MSA categories are assigned a one and the remaining category, non-MSA is assigned a zero.

### *Organizational Factors*

System Affiliation (Mhsmemb) is defined using the hospital's reported affiliation with a multi-institutional system. All other hospitals will be presumed to be free-standing.

Payer-mix (Prctmcd) measures the hospitals proportion of Medicaid patients. This measure is used to assess the hospitals' relative level of commercial versus public paying patients. The theory holds that since Medicaid is stigmatized like psychiatry, hospitals with higher levels of Medicaid will be more likely to provide these psychiatric services. Hospital proportion of Medicaid payers will be obtained from the AHA.

Child Psychiatric Residency Programs (Cresid) is a binary measure of whether a hospital offers a child psychiatric residency program or not. A list of child psychiatric residency programs is provided by the ACGME (Yeatts, 2005).

Ownership Status identifies hospital orientation classified as investor-owned (IO), not for profit secular (Secular), not for profit Catholic (Catholic), and public (Public) hospitals. These measures are included individually as dummy variables measured by the AHA. Investor owned hospitals will be the reference group.

General versus Specialty Hospitals (Specialch) measures whether a hospital is a general community hospital or a children's hospital. Identification of a children's hospital is based on the AHA criteria which includes free-standing children's hospitals and NACHRI's identification of children's hospitals within a hospital. A summary of the dependent, independent and control variables for this study are found in Table 3.

Table 3. Variables – Dependent, Independent, Control Variables for the Logistic Regression Models

Variable Name	Measurement	Type of Variable	Data Source	Hypothesis
Dependent Variables				
Psychahos	Hospital provides child/adolescent psychiatric services	Binary	AHA	1a-11a
HCOMIT	Number of hospital-based psychiatric services. Additive scale based on 6 services: 1.psych hosp care 2.psych ER 3.psych outpatient services 4.psych partial hosp program 5.alcohol/drug abuse outpatient services 6.alcohol/drug abuse inpatient services	Binary  High commitment = 4 to 6 services  Low commitment = 1 to 3 services	AHA	1b-11b
Independent Variables				
Child Psychiatrists	Number of psychiatrists per 100,000 youth (Psychmd)	Continuous	ARF	1-11 both a & b
Psychiatric hospitals	Presence of psychiatric hospital – adult and child that provide child/adolescent psych services (Psychosp)	Binary	AHA	1-11 both a & b
Community Ethnicity	Ethnic mix of children and adolescents in a market (Cethnic) 1=White 2=African American 3=Hispanic	Dummy Variable – White is the reference group	ARF	1-11 both a & b
Socio-economic status	Family median income level (Ses)	Continuous	ARF	1-11 both a & b
Competition	Herfindahl index = sum of squares of hospitals in a market. System affiliation will count as one hospital. (Comp)	Continuous	AHA	1-11 both a & b
Mimetic Isomorphism	Percentage of non-profit hospitals in a market (Prctnfp)	Continuous	AHA	1-11 both a & b

Table 3. Variables – Dependent, Independent, Control Variables for the Logistic Regression Models (continued)

Community Orientation (Corient)	Additive scale of 6 hospital-oriented services: 1.Hosp work with local providers etc. to conduct health status assessment to community 2.Hosp uses health status indicators for new services 3.Hosp capacity for health service in community 4.Hosp ident. unmet health needs 5.Hosp collect etc. information to organization 6.Hospital disseminates report, quality & costs	Binary Variable – 1 to 3 services low orientation 4 to 6 services high orientation	AHA	1-11 both a & b
Community Orientation II	MSA and Non-MSA	Binary - 1= MSA, 0 = Non-MSA	AHA	1-11 both a & b
System Affiliation	Does the hospital belong to a hospital system (Mhsmemb)	Binary	AHA	1-11 both a & b
Payer mix	Number of hospital Medicaid discharges (Prctmcd)	Continuous	AHA	1-11 both a & b
Child Psych Residency Program	Presence of a child psychiatric residency program within a hospital (Cresid)	Binary	ACGME	1-11 both a & b
Ownership Status	1.Investor Owned (IO) 2.Non-profit Secular (Secular) 3.Non-profit Catholic (Catholic) 4.Public (Public)	Dummy Variable – Investor owned is reference group	AHA	1-11 both a & b
Specialty Status	Freestanding children’s hospital (Specialch)	Binary	AHA	1-11 both a & b
Control Variables				
Hospital Bed Size	Total hosp beds set up & staffed (Size)	Continuous	AHA	1-11 both a & b
Emergency Department	Presence of Emergency Department (ER)	Binary	AHA	1-11 both a & b
Occupancy Rate (Occu)	Hospital overall occupancy rate. Inpatient total days (Ipdtot) divided by total hosp beds (Bdtot)	Continuous	AHA	1-11 both a & b

### *Control Variables*

Hospital bed size (Size) is positively associated with specialized and stigmatized service utilization (LeBlanc, 1991; LeBlanc and Hurley, 1995; White and Begun, 1998/99; White et al., 2002; White et al., 2006). Emergency Room (ER) is a control variable. The presence of an emergency room is necessary if hospitals offer a range of psychiatric services that include emergency psychiatric services.

Occupancy Rate (Occu) measures the hospitals overall level of occupancy. Hospitals with lower occupancy rates might be more willing to expand into other services to help fill beds. This variable is created by taking inpatient days total (IPDTOT) divided by the total number of hospital beds (BDTOT) (White et al., 2004).

### *Analysis*

The analysis includes descriptive statistics calculated for each variable, analysis of correlation among the variables, and logistic regression analysis used to address specific research hypotheses. Data management and analysis is performed using SPSS.

Descriptive analysis is used to identify outliers, missing data, means and standard deviations of the variables. Variable outliers are examined and determined whether they need to be excluded. Hospitals that have missing data on key variables are omitted. Missing data on other variables is addressed using a substitution imputation or elimination of the variable.

Correlational analysis is used to identify any multi-collinearity among the variables which is defined as a correlation of  $>.70$  (Tabachnik & Fidell, 2001). Multi-collinearity is addressed by deciding whether eliminating one of the correlated variables should be removed.



The main analysis includes two logistic regression models. The first model answers the first two research questions regarding environmental and organizational factors associated with a hospital's willingness to commit to offering child/adolescent psychiatric services. The second model includes the same factors as the first model, but the dependent variable assesses the level of commitment, as either high versus low.

Logistic regression is used to estimate the probability of a discrete outcome (Tabachnik & Fidell, 2001). Predictor variables in the model can be continuous, categorical, or dichotomous (Tabachnik & Fidell, 2001).

The general Logistic Regression model is as follows:

$$\hat{Y}_i = e^u / 1 + e^u$$

Where  $\hat{Y}_i$  is the estimated probability that the  $i$ th case ( $i=1, \dots, n$ ) is in one of the categories and  $u$  is the usual linear regression equation:

$$u = A + B_1X_1 + B_2X_2 + \dots + B_kX_k$$

with constant  $A$ , coefficients  $B_j$ , and predictors  $X_j$  for  $k$  predictors ( $j=1, 2, \dots, k$ )

(Tabachnik & Fidell, 2001, p. 518).

The logistic regression includes a transformation of the probability ( $\pi$ ) of the outcome on to the log odds scale (Kirkwood & Stern, 2003, p. 197).

$$\text{Logit}(\pi) = \log(\pi / 1 - \pi)$$

An equivalent form of the logit function is:

$$\text{Logit}(\text{prob } Y=1|XB) = \beta_0 + \beta_1X_1 + \dots + \beta_nX_n$$

The identification of the statistical significance of each independent variable is assessed using the Wald Chi-Square Test statistic (Kirkwood & Stern, 2003). The Wald

Chi-Square Test statistic is calculated by dividing the regression coefficient by its standard error and then determining the p-value (Kirkwood & Stern, 2003), from the Chi-square distribution.

### Limitations

The research design, sample, and data used in this study limit the scope of the analysis, validity of the results, and interpretation of the findings. Results from this cross-sectional observational study cannot be used as evidence for causal association.

The data used in the study consider only a single year, and do not reflect changes from year to year in the offering of services. Hospitals evaluated in the study may have added or decreased service offerings from prior periods, and this is not measured in this cross-sectional analysis.

Generalization to other hospitals also requires caution, since all of the important confounding factors within markets may not have been taken into account. Specific market differences may not reflect the results found here.

Using a secondary database has its own limitations. Hospitals that did not indicate whether they actually provide these services (missing data) can bias the results, given that this is the dependent variable. A possible analytic limitation may be the presence of multi-collinearity between variables leading to the exclusion of explanatory variables.

Another problem with a secondary database is the limited choice and measurement of the various variables, particularly the measurement of child/adolescent psychiatric services. The AHA database has a specific question that asks if a hospital provides child/adolescent psychiatric services. If the hospital indicates yes, then all

psychiatric services later in the questionnaire are assumed to be provided to children and adolescents (Bazzoli, 2004). This is a safe assumption, but there is a potential for overestimation of the hospital-based services. Utilization data on these variables would provide a more accurate estimation. In fairness to the AHA questionnaire, it is unlikely to provide information on every possible issue, specifically a very specialized service like hospital-based child psychiatric services.

## CHAPTER FIVE: RESULTS

The results of this study are presented in the following order: study population, missing data, database choice, independent variable and dependent variable issues, correlation matrix, descriptive analysis and logistic regression analysis.

### Study Population

A total of 5,344 hospitals represented in the AHA data qualified as acute care non-federal general, children's or psychiatric hospitals in the United States. Those omitted include federal government, specialty, and long term care hospitals. All hospitals with missing data on the dependent variable of child/adolescent psychiatric services were removed, leaving 4,349 hospitals. Four additional hospitals that signified the provision of child/adolescent psychiatric services were deleted because they indicated zeros on all six psychiatric services. The removal of the four hospitals and all psychiatric hospitals reduced the database to 4,074 hospitals. The final database size was based on the choice of imputation for missing data as detailed below.

### Missing Data

Hospitals in the dataset had missing data on system membership, emergency room (ER) department, Catholic hospital, and the six community orientation variables. Missing data for the variables system membership, ER, and Catholic hospitals were imputed from the AHA 2001 and 2000 database. In addition to evaluation of missing

data, an examination was conducted to detect any outliers. The outliers that were found resulted from errors in data entry and were corrected.

System membership data was missing for 11.8% of hospitals in year 2002, and this dropped to 4% after obtaining data from the AHA 2001 database. Missing ER data decreased from 7.6% initially, to 2% after imputing variables from the AHA 2001 and AHA 2000. There were two hospitals missing data for the variable on Catholic hospitals. Information from the AHA 2001 was available for one hospital, the other one was dropped due to missing data. The 107 hospitals that still had missing data on these variables after the imputation from the AHA 2001 and 2000 were deleted.

The six community orientation variables had the largest amount of missing data. The initial missing data ranged from 19% for the “use of a written assessment of unmet needs” to 12.1% for “uses health status in the community”. Phone contact was made with the AHA office to ascertain how missing data is treated. The AHA office stated that only financial and/or utilization data are imputed from a previous year when hospitals do not respond to a question. In the case of the community orientation variables, if there is no response then the AHA leaves the information blank.

Three approaches to managing the missing community orientation data were explored. The first approach deletes all hospitals with missing community orientation data. Assumption of the null is the second approach for missing community orientation data. The last approach imputes data from the AHA survey for the 2 years prior to 2002.

Prior to imputation, an examination of the community orientation questions revealed that two of the six community orientation variables are contingent. The first contingent variable asks whether the hospital works with other local providers, public

agencies, or community representatives to develop a written assessment of the appropriate capacity for health services in the community. The second contingent question asks hospitals indicating a yes to this question, whether they use the assessment to identify unmet health needs, excess capacity, or duplicative services in the community.

A correlation analysis was conducted only on hospitals that answered both questions for the year 2002. If the answer to the first question regarding a written assessment was answered no, 99.8% (or all but one hospital) stated no to the second question that they did not use the assessment. If the hospital answered yes to the first question, 95.8% of the hospitals indicated a yes to the second question. All cases where the answer was no to the first question regarding a written assessment, then no was imputed for the second question, use of the assessment. If the response to the first question was yes, then an answer of yes was imputed for the second question.

Missing data on the four remaining community orientation variables were dealt with in three different manners elaborated earlier. The first database included only hospitals with no missing community orientation data and resulted in 3,304 hospitals. The second database utilized the null assumption on missing community orientation variables and resulted in 3,967 hospitals.

Prior to imputing AHA data, a 10% random sample of hospitals with no missing data on all six community orientation variables from the 2002 AHA survey was conducted to check for consistency in the AHA data between the years 2002 and 2001. There was a 77.3% consistency in results. After imputing the community orientation data from the AHA 2001, missing data for these variables was still present. So AHA 2000 survey data was imputed after another 10% random sample tested the consistency of

AHA data on the community orientation variables between the years 2002 and 2000 with a 56.4% consistency in results. The imputation of AHA 2000 data included an additional 155 hospitals for a total database study population of 3,860 hospitals.

#### Database Selection

Database selection was decided with a sensitivity analysis comparing the three imputed databases. Descriptive statistics were performed on all three databases with no discernable differences between the different imputation methods, except with a notable change only in the community orientation variables which varied mostly with the null assumption approach. The missing data in the six community orientation variables appear random given no significant differences in the other independent variables. See Appendix A for the comparison of the descriptive statistics in the three databases. The database of choice is the AHA imputed database with a study population of 3,860 hospitals. The smaller database that assesses the level of hospital commitment resulted in a study population of 670 hospitals.

#### Independent Variables

One of the proposed independent variables, ethnicity, had several problems. Initially the variable ethnicity was to be a dummy variable with the three ethnic groups of white, African American and Hispanic. Whites were to be the reference group. First, a dummy variable for ethnicity could not be created since every county has all three ethnic groups present. The next step was to calculate specific ethnic percentages but many of the total county ethnic child population percentages were greater than 100%. A possible explanation is the change in the 2000 census which now allows for double counting of Hispanic people. Randolph et al. (2002) conducted a study on double counting of

Hispanics in the 2000 Census in non-MSA areas which demonstrated limited problems with double counting. However, a personal communication and inquiry into a calculation problem with the ARF census data uncovered that double counting with Hispanics does exist to such an extent that use of the ARF data on Hispanics was not possible (Carretta correspondence, 2005). Therefore, ethnicity is identified as the percentage of non-white children in a county.

The identification of Catholic hospitals from other religious hospitals was carried out by using the AHA MAPP-16 code. The MAPP-16 code identifies Catholic hospitals. Selection of Catholic hospitals based on the AHA MAPP-16 code was compared with the responses to the control code for church owned NFP hospitals. All hospitals identified as Catholic hospitals were assigned to the church owned NFP hospital control code. The remaining religious NFP hospitals were grouped with the secular NFP hospitals. Catholic hospitals were separated from other religious hospitals because Catholic hospitals have the same organizational mission based on the Code of Canon Law for the Roman Catholic Church and represent more than 94% of all religious NFP hospitals (White, 2000).

#### Dependent Variables

The dependent variable for the first model includes all hospitals that indicate whether or not they provide child psychiatric services. The second dependent variable is created only from the hospitals in the larger database that indicate the provision of child psychiatric services. This second dependent variable uses six specific psychiatric services that are grouped to reflect the level of hospital commitment. Level of commitment is divided into two groups, high commitment versus low commitment.



There was no discernable pattern in the range of six potential psychiatric services that hospitals offered to indicate a level of commitment. Therefore, the initial division of services was to group hospitals with one to three psychiatric services representing a low level of commitment and hospitals with four to six psychiatric services representing a high level of commitment. A distribution of the number of six psychiatric services hospitals offered was conducted and revealed a skewing to the left. The majority of hospitals offering child psychiatric services provide four to six psychiatric services. The distribution of the six psychiatric services is shown in Figure 7.

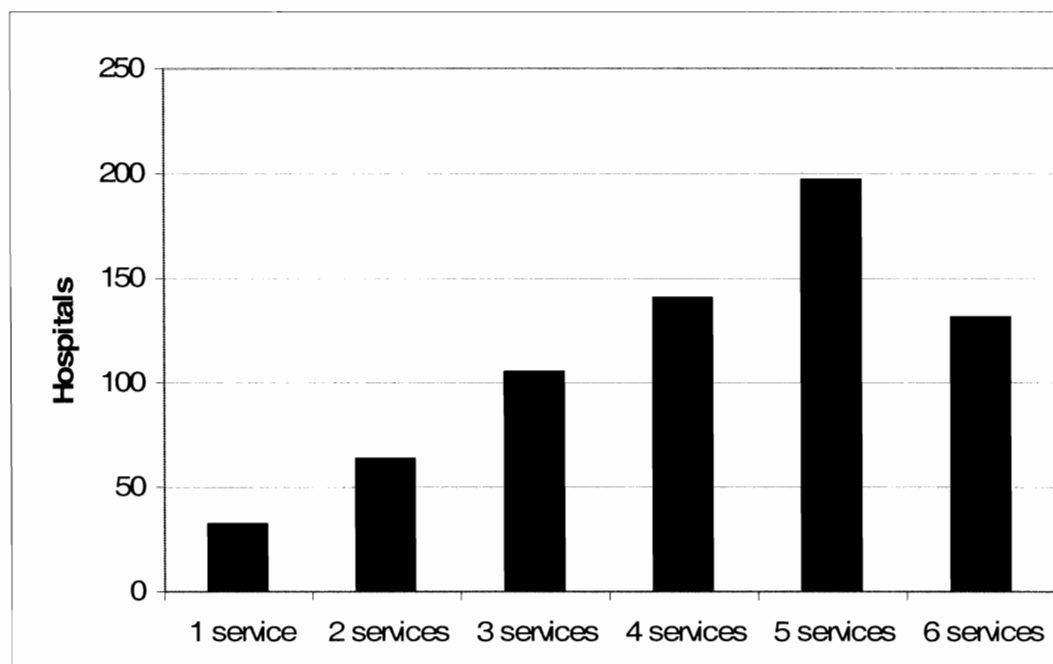


Figure 7. Distribution of Six Child/Adolescent Psychiatric Services

Utilizing the distribution of the number of hospital child psychiatric services, it was expected that hospitals offering child psychiatric services would be more likely to offer inpatient services at a minimum followed by emergency room services. An analysis of this assumption showed that 96.3% of the hospitals provided both inpatient and/or ER psychiatric services. Based on the information regarding the high percentage of hospitals offering inpatient and ER psychiatric services along with the skewed data, a decision was made to split the remaining four services (outpatient psychiatric services, partial hospitalization, inpatient substance abuse and outpatient substance abuse) in half. Consequently, a low level of commitment comprise hospitals that offer one to four psychiatric services (51.1%) versus a high level of commitment comprise hospitals that offer five to six psychiatric services (49%).

## Findings

### *Correlations for Large Database*

A correlation matrix was run for both databases. The correlations for the database of 3,860 hospitals had one set of variables, percentage of NFP hospitals and public hospitals, being multicollinear (-.0727). The percentage of NFP hospitals and secular hospitals were highly correlated at 0.651. The decision was made to keep both sets of variables so as to test the hypotheses related to the theoretical model. There were no other correlations higher than 0.568 which reflects the correlation between secular and Catholic hospitals. The results of the correlation matrix for the large database are presented in table 4.

Table 4. Correlation Matrix for Hospital Commitment to Child Psychiatric Services Variables N=3860

Variable	Psyca hosp	Psych md	Psych hosp	Nonwht	SES	Comp	Prctnt nfp	Corient	MSA	Mhs memb	Prctnt mcd	Cresid	IO
Psychahosp	1												
Psychmd	.083**	1											
Psychhosp	.108**	.492**	1										
Nonwht	.057**	.415**	.325**	1									
SES	.210**	.279**	.299**	.020	1								
Comp	-.15**	-.50**	-.50**	-.40**	-.43**	1							
Prctntnfp	.195**	.075**	.116**	-.07**	.277**	-.18**	1						
Corient	.153**	.011**	.081**	.032*	.176**	-.12**	.138	1					
MSA	.214**	.367**	.459**	.349**	.563**	-.63**	.224**	.181**	1				
Mhsmemb	.117**	.161**	.195**	.164**	.223**	-.25**	.251**	.174**	.333**	1			
Prctntmcd	-.01**	.029	-.037*	.088**	-.16**	.028	-.04**	-.07**	-.12**	-.13**	1		
Cresid	.259**	.177**	.172**	.198**	.062**	-.18**	.052**	.044**	.165**	.047**	.09**	1	
IO	-.11**	.072**	.071**	.137**	-.04**	-.10**	-.31**	-.06**	.100**	.213**	-.06**	-.05**	1
Secular	.138**	.035**	.051**	-.06**	.172**	-.08**	.651**	.089**	.110**	.047**	-.40**	.045**	-.36**
Catholic	.058**	.055**	.073**	.012	.082**	-.11**	.238**	.085**	.113**	.259**	-.05**	-.07**	-.15**
Public	-.12**	-.14**	-.17**	-.04**	-.23**	.259**	-.72**	-.13**	-.29**	-.43**	.127**	.040**	.202**
Specialch	.203**	.074**	.122**	.147**	.082**	-.15**	.052**	.035**	.151**	.032*	.110**	.487**	-.05**
Size	.433**	.310**	.356**	.346**	.280**	-.42**	.168**	.182**	.491**	.289**	.039*	.364**	-.036*
ER	.046**	-.05**	-.00**	-.026	.036*	.001	.030*	.067**	.014**	.051**	-.06**	.026**	.039*
Occup	.213**	.220**	.250**	.216**	.286*	-.34**	.221**	.129**	.358**	.184**	.301**	.180**	.080**
Variable	Secular	Catholic	Public	Special ch	Size	ER							
Catholic	.408**	1											
Public	.568**	-.229**	1										
Specialch	.095**	-.038**	.04**	1									
Size	.124**	-.082**	.185**	.241**	1								
ER	.030	.020	.022**	-.022**	.054**	1							
Occup	.177**	.044**	-.18**	.140**	.430**	.028	1						

\* p = 0.05 (2-tailed); \*\* p = 0.01 (2-tailed)

*Descriptive Statistics for the Large Database*

The descriptive statistics for the 3,860 hospitals divide the hospitals into two groups, hospitals that provide child psychiatric services and hospitals that do not provide child psychiatric services. Seventeen percent (670) of hospitals provide child psychiatric services. All of the environmental factors have statistically significant differences between the group means with p-values  $\leq 0.000$ .

Hospitals that provide child psychiatric services have a mean of 20.33 child psychiatrists per 100,000 youth population compared to hospitals without child psychiatric services having a mean of 12.62 child psychiatrists per 100,000 youth population. Thirty-four percent of hospitals that offer child psychiatric services have a psychiatric hospital present compared to 22% of hospitals that do not offer child psychiatric services have a psychiatric hospital present.

The total mean percent of non-white children is higher 27.05% in counties that have hospitals which offer child psychiatric services versus 24.08% of non-white children in counties with hospitals that do not offer child psychiatric services. Socio-economic status, defined as family median income, demonstrated a higher mean of \$51,480 in counties with hospitals that offer child psychiatric services. Counties with hospitals that do not offer child psychiatric services had a mean family median income of \$45,240.

Competition was measured using a system-adjusted Herfindahl index. Competition was higher for hospitals providing child psychiatric services, a mean Herfindahl index of 0.56, compared to hospitals not providing child psychiatric services, a mean Herfindahl index of 0.69. Table 5 shows the descriptive statistics.

Table 5. Descriptive Statistics for Hospitals Providing Child Psychiatric Services

Variables	Full Sample N = 3860 (100%)	No Psych Services N= 3190 (82.6%)	Psych Services N = 670 (17.4%)
Independent Variables - Environmental Factors			
Mean Child Psychiatrist/100,000 Youth	13.95 (35.27)	12.62 (34.92)	20.33 ** (35.27)
Percent with Psychiatric Hospital Present	23.7%	21.6%	33.7% **
Mean Percent of Non-white Children	24.59 (19.89)	24.08 (19.83)	27.05 ** (20.07)
Mean Family Median Income (in 1,000's)	46.32 (11.24)	45.24 (10.91)	51.48 ** (11.36)
Mean Herfindahl Index	.67 (.32)	.69 (.32)	.56 ** (.31)
Mean Percentage of NFP Hospitals	64.13 (40.90)	60.47 (42.11)	81.55 ** (28.77)
Percent High Community Orientation	74.9%	71.9%	89.4% **
Percent Hospitals in MSA	53%	48.1%	76.3% **
Organizational Factors			
Percent Hospitals with System Affiliation	56.6%	53.9%	69.3% **
Mean Percent Medicaid Patients in Hospital	.19 (.18)	.19 (.18)	.19 (.14)
Percent Child Psych. Residency Programs	3.1%	1%	12.8% **
Percent Investor Owned Hospitals	11.4%	13.1%	3.6% **
Percent Secular Hospitals	50.3%	47.2%	65.4% **
Percent Catholic Hospitals	14.1%	13.2%	18.5% *
Percent Public Hospitals	24.1%	26.6%	12.5% **
Percent Children's Hospitals	2.6%	1.1%	9.7% **
Control Variables			
Mean Hospital Bed Size	176.60 (182.30)	140.46 (133.52)	348.70 ** (266.14)
Percent Hospitals with ER	96.5%	96.1%	98.4% **
Mean Occupancy Rate	.57 (.20)	.55 (.20)	.66 ** (.18)

\* p = 0.001; \*\* p ≤ 0.000; (standard deviations)

Hospitals offering child psychiatric services have a higher mean percentage of NFP hospitals, 81.55%, compared with a 60.47% mean of NFP hospitals for hospitals that do not offer child psychiatric services. Hospitals offering child psychiatric services are more likely located in a MSA, 76% versus 24% in non-MSA areas. The percentage of hospitals located in a MSA and not offering child psychiatric services drops to 48%.

The last environmental factor, community orientation assesses the hospitals focus on the health needs of the community. A high level of community orientation was found to exist in hospitals that offer child psychiatric services, 89%. The level of high community orientation drops to 72% in hospitals that do not offer child psychiatric services.

All organizational factors proved statistically significant except the hospital percentage of Medicaid patients. The percentage of hospitals that are system affiliated is higher for hospitals offering child psychiatric services, 69%, compared to the percentage of hospitals with a system affiliation and not offering child psychiatric services, 54%.

Child psychiatric residency programs were present in 12.8% of hospitals offering child psychiatric services. Only 1% of hospitals with a child psychiatric residency program were in hospitals not offering child psychiatric services. Similarly, children's hospital have 9.7% or 65 of the 670 hospitals offering child psychiatric services versus 1.1% or 36 children's hospitals out of the 3,190 hospitals that do not offer child psychiatric services. Table 6 shows the distribution of children's hospitals based on the NACHRI definition of a children's hospital and whether or not they offer child psychiatric services.

Table 6. Children's Hospitals Decision to Offer Child Psychiatric Services

Total Children's Hospitals N = 101	No C/A Psych Services N = 36	C/A Psych Services N = 65
Children's Hospital within a Hospital	16 (44%)	41 (63%)
Freestanding	20 (56%)	24 (37%)

The ownership variables demonstrated that only 3% of IO hospitals provide child psychiatric services. A small percentage of the hospitals that offer child psychiatric services are public hospitals, 13%. Of all the hospitals providing child psychiatric services, 65% of them are secular, 65%, and 19% are Catholic hospitals. Hospitals with more beds, presence of an emergency department, and with higher occupancy rates tend to offer child psychiatric services.

#### *Correlations for Small Database*

The second correlation matrix relates to the analysis for the level of commitment in hospitals offering child psychiatric services. The total number of hospitals is smaller, 670 hospitals. The problem of multicollinearity that existed in the larger database for the two variables percentage of NFP hospitals and Public hospitals is not present. The actual correlation for these two variables is -0.63. There were not problems with multicollinearity with the correlation matrix for the smaller database. However, there was a high correlation between secular and Catholic hospitals, 0.655. The high correlation is explained by the fact that both hospitals are NFP and will be kept in the analysis. Table 7 presents the results of the correlation matrix.

Table 7. Correlation Matrix for Hospital Level of Commitment to Provide Child Psychiatric Services Variables N=670

Variable	Psyca hosp	Psych md	Psych hosp	Nonwht	SES	Comp	Prnt nfp	Corient	MSA	Mhs memb	Prnt med	Cresid	IO
Psycahosp	1												
Psychmd	.070												
Psychhosp	.028	.449**											
Nonwht	.119**	.454**	.283**										
SES	.116**	.237**	.202**	-.063									
Comp	-.11**	-.44**	-.36**	-.45**	-.28**								
Prntnfp	.071	.021	.029	-.13**	.208	-.008							
Corient	.056	.022	-.011	.050	.046	-.078*	.058						
MSA	.216**	.304**	.324**	.411**	.356**	-.576*	.049	.116**					
Mhsmemb	.193**	.126**	.072	.113**	.140**	-.12**	.161	.107**	.176**				
Prntmed	-.08**	.058	.067	.230**	-.20**	.121**	-.038	-.080*	.016	-.10**			
Cresid	.044	.332**	.230**	.343**	-.026	-.27**	-.065	.016	.204**	-.034	.238**		
IO	-.044	.024	.032	.089*	-.072	-.035	-.282	-.14**	.032	.076*	-.011	-.050	
Secular	-.015	.057	.035	-.015	.120**	-.012	.437**	.025	-.015	-.029	.067	-.011	-.265
Catholic	.087*	-.083*	-.047	-.084*	-.003	-.001	.136**	.064	.049	.193**	-.051	-.18**	-.092*
Public	-.055	.022	-.013	.070	-.128*	-.037	-.63**	-.031	-.054	-.22**	.165**	.259**	-.073
Specialch	-.059	.109**	.161**	.225**	.039	-.19**	-.029	.015	.171**	-.066	.266**	.492**	-.063
Size	.239**	.324**	.271**	.401**	.079*	-.31**	-.001	.101**	.393**	.238**	.073	.366	-.017
ER	.103**	-.044	.018	.019	.052	.035	.060	.108**	.001	.041	.004	.050	-.101**
Occup	.100**	.258*	.176**	.289**	.211**	-.25**	.091**	-.013	.333**	.093	.189**	.248**	-.072
Variable	Secular	Catholic	Public	Specialch	Size	ER							
Catholic	-.655**												
Public	-.522**	-.180**											
Specialch	.122**	-.130**	.013										
Size	.034	.058	.029	.201**									
ER	-.020	.062	.013	-.077*	.103**								
Occup	.095**	-.072	-.011	.167**	.300**	.073							

\* p = 0.05 (2-tailed); \*\* p = 0.01 (2-tailed)



*Descriptive Statistics for the Smaller Database*

Hospitals offering child psychiatric services are divided into two groups of hospital commitment, low level of commitment versus a high level of commitment. Of the 670 hospitals offering child psychiatric services, 49% (328 hospitals) have a high level of commitment and 51% (342 hospitals) have a low level of commitment. The second model has fewer variables that are statistically significant, only half of the environmental factors are significant compared with all the environmental factors in the first model. The four significant factors are the mean percentage of non-white children, mean family median income, mean Herfindahl index, and percentage of hospitals in a MSA.

The mean number of child psychiatrists per 100,000 youth in hospitals with a high level of commitment was 22.93, versus the low level of commitment had a mean of 17.83 child psychiatrists per 100,000 youth was not significant. The presence of a psychiatric hospital in a market is also not significantly different.

The mean family median income level present in hospitals with a high level of commitment was \$52,830 versus \$50,190 for hospitals with a low level of commitment. Family median income along with the percentage of non-white children was statistically significant. The average percentage of non-white children was higher in hospitals with a high level commitment, 29.49% versus hospitals with a low level of commitment when offering child psychiatric services was 24.72%. Table 8 presents the descriptive statistics for the hospital level of commitment when offering child psychiatric services.

Table 8. Descriptive Statistics for Level of Child Psychiatric Services Offered

Variables	Full Sample N = 670	Low Level Services N= 342 (51%)	High Level Services N = 328 (49%)
<b>Independent Variables - Environmental Factors</b>			
Mean Child Psychiatrists/100,000 Youth	20.33 (36.27)	17.83 (34.39)	22.93 (38.00)
Percent with Psychiatric Hospital Present	33.7%	32.5%	35.1%
Mean Percent of Non-white Children	27.05 (20.07)	24.72 (19.21)	29.49 * (20.68)
Mean Family Median Income (in 1,000's)	51.48 (11.36)	50.19 (11.00)	52.83 * (11.59)
Mean Herfindahl Index	.56 (.31)	.59 (.33)	.52 * (.28)
Mean Percentage of NFP Hospitals	81.55 (28.77)	79.54 (31.14)	83.64 (25.95)
Percent High Community Orientation	89.4%	87.7%	91.2%
Percent Hospitals in MSA	76.3%	67.3%	85.7% **
<b>Organizational Factors</b>			
Percent Hospitals with System Affiliation	69.3%	60.5%	78.4% **
Mean Percent of Medicaid Patients in Hospital	.19 (.14)	.20 (.15)	.18 * (.12)
Percent Child Psych Residency Programs	12.8%	11.4%	14.3%
Percent Investor Owned Hospitals	3.6%	4.4%	2.7%
Percent Secular Hospitals	65.4%	66.1%	64.6%
Percent Catholic Hospitals	18.5%	15.2%	22% *
Percent Public Hospitals	12.5%	14.3%	10.7%
Percent Children's Hospitals	9.7%	11.4%	7.9%
<b>Control Variables</b>			
Mean Hospital Size	348.70 (266.14)	286.35 (217.20)	413.71 ** (295.64)
Percent Hospitals with ER	98.4%	97.1%	99.7% *
Mean Occupancy Rate	.66 (.18)	.65 (.21)	.68 * (.13)

\* p = 0.05; \*\*p ≤ 0.001; (standard deviations)

The system-adjusted Herfindahl index is lower, 0.52, indicative of a higher level of competition for hospitals with a high level of commitment. The Herfindahl index for hospitals with a low level of commitment was 0.59, indicative of a lower level of competition. The difference is statistically significant.

The mean percentage of NFP hospitals was higher, 83.64%, for hospitals with a high level of commitment versus 79.54% for hospitals with a low level of commitment. The percentage of high hospital community orientation towards the health care needs of the surrounding community was not statistically significant. Community orientation is high in both high and low levels of commitment groups, 91.2% and 87.7%, respectively. Neither the mean percentage of NFP hospitals nor the percentage of high hospital community orientation was statistically significant.

The last environmental variable, hospitals located in a MSA, was statistically significant. There were 85.7% of hospitals located in markets in a MSA that provide a high level of child psychiatric services compared to 67.3% of hospitals located in a MSA offered a low level of child psychiatric services. Slightly more than two times as many hospitals located in a non-MSA area provided a low level of child psychiatric services.

The group of organizational factors in the second model had four less significant variables than the first model. The three significant variables were system affiliation, percentage of Medicaid patients in a hospital and Catholic hospitals.

The percentage of hospitals with a system affiliation and a high level of commitment was 78% versus 61% of hospitals had a system affiliation and offered a low level of commitment. The percentage of Medicaid patients was lower in the group with a

high level of commitment, 18% but the difference between the higher level and lower level commitment group, 20% was significant.

Fourteen percent of hospitals with a high level of commitment have a child psychiatric residency program compare to 11% of hospitals with a low level of commitment. To provide a possible explanation, a separate analysis was done to assess the distribution of the six separate psychiatric services. Hospitals with a low level of commitment, 51%, were least likely to offer inpatient and outpatient substance abuse services. Hospitals with a high level of commitment, 49%, were least likely to offer inpatient substance abuse services with partial hospitalization as a distance second. Table 9 has the distribution of services.

Table 9. Distribution of Dependent Variable on the Array of Child Psychiatric Services

Type of Service N= 670 Total Hospitals	Low Level Commitment N = 342	High Level Commitment N = 328
Inpatient psych care	256 (74.9%)	328 (100%)
Psych outpatient care	254 (74.3%)	324 (98.8%)
Psych ER services	294 (86%)	321 (97.9%)
Outpatient Substance Abuse	84 (24.6%)	321 (97.9%)
Partial Hospitalization	128 (37.4%)	298 (90.9%)
Inpatient Substance Abuse	23 (6.7%)	179 (54.6%)

The identification of fewer substance abuse services in hospitals with a low level of commitment lead to a closer examination of the types of ACGME residency programs available. Besides offering a child psychiatric residency program there is also a separate residency program for addictive services (ACGME website, 2005; ACMGE, 2002). It is possible that child psychiatric residency programs may be associated more with non-

substance abuse (addictive) services and explain the lack to significance between the high and low level commitment groups. The identification of addictive residency programs was not done for this study, but one hypothesis for future investigation is the presence of two different but equally related types of residency programs which may be associated with hospitals offering a high level of child psychiatric services versus hospitals offering a low level of child psychiatric services.

Children's hospitals were anticipated to provide a high level of services, but only 8% (26 hospitals) actually did, while 11% (39 hospitals) provided a low level of services. Table 10 provides the distribution of children's hospitals, as defined by NACHRI, broken down by their level of commitment.

Table 10. Level of Child Psychiatric Service Commitment in Children's Hospitals

Total Children's Hospital N = 65	Low Level of Commitment N = 39 (60%)	High Level of Commitment N = 26 (40%)
Freestanding	21 (54%)	3 (12%)
Children's Hospital within a Hospital	18 (46%)	23 (88%)

The majority of hospitals in the high level of commitment group are identified as a children's hospitals within a hospital. It is possible that a system-like affiliation exists in a children's hospital embedded within a hospital which may offer the necessary support needed to provide a higher number of child psychiatric services.

Investor owned and secular hospital distribution of low versus high level of services is fairly even. The distribution between high and low level of commitment for

public hospitals was not even. There were a smaller number of public hospitals in the high level of commitment group. All three groups of hospitals, based on ownership status, were not significant. Catholic hospitals were significant at the 0.05 level and had a 7% higher number of hospitals offering a high level of child psychiatric services.

The control variables were all significant. Larger hospitals are associated with a higher level of child psychiatric service offering. ER departments are present in all but one hospital in the high level of commitment group. The last control variable, occupancy rate, demonstrated higher occupancy rates are present in hospitals with a high level of child psychiatric services.

### *Logistic Regression*

In order to test the study hypotheses, a multivariate analysis is necessary. Logistic regression was used since the dependent variable is dichotomous. The presentation of the results will discuss the larger database which assesses hospitals that provide child/adolescent psychiatric services followed by the second logistic regression analysis which assesses the hospital level of commitment to offer child psychiatric services.

The Chi-square for the global model is 889.153 with 18 degrees of freedom, a p-value < 0.000, and a Cox and Snell R Square of 20.6%. The overall predictive capability of the model is 85.0%, with a 28.5% correct prediction for hospitals offering child psychiatric services. Table 11 presents the logistic regression results including the odds ratios and confidence intervals.

Table 11. Logistic Regression Results for Hospitals Providing Child Psychiatric Services\*

Variables	Coefficients	SE	Wald	P-Value	Odds Ratio	95% Confidence Interval for Odds Ratio
<b>Environmental Factors</b>						
<b>Resource Dependence</b>						
Child Psychiatrists/ 100,000 Youth	-.002	.002	1.028	.311	.998	.994 – 1.002
Psychiatric Hospitals	-.336	.133	6.357	.012	.714	.550 – .928
Percent Non-white Children	-.013	.003	15.266	.000	.987	.980 - .993
Family Median Income	.023	.005	18.946	.000	1.023	1.013 – 1.034
<b>Institutional</b>						
Herfindahl Index	.077	.151	.260	.610	1.080	.804 – 1.451
Percent NFP Hospitals	1.159	.262	19.613	.000	3.185	1.908 – 5.319
Community Orientation	.722	.149	23.473	.000	2.058	1.537 – 2.756
Hospitals in MSA	-.075	.152	.242	.623	.928	.689- 1.250
<b>Organizational Factors</b>						
<b>Resource Dependence</b>						
System Affiliation	-.142	.118	1.463	.226	.867	.689 – 1.092
Percent Medicaid Patients	-.439	.352	1.552	.213	.645	.323 – 1.286
Child Psych Residency Program	1.171	.297	15.571	.000	3.224	1.802 – 5.766
<b>Institutional</b>						
Secular Hospital	.453	.274	2.731	.098	1.573	.919 – 2.690
Catholic Hospital	.539	.285	3.572	.059	1.714	.980 – 2.998
Public Hospital	.577	.283	4.148	.042	1.781	1.022 – 3.104
Children's Hospital	1.037	.315	10.838	.001	2.822	1.522 – 5.233
<b>Control Variables</b>						
Hospital Size	.006	.000	239.423	.000	1.006	1.005 – 1.006
ER	.324	.354	.839	.360	1.383	.691 – 2.768
Occupancy Rate	.581	.312	3.470	.062	1.789	.970 – 3.298
Constant	-5.958	.533	125.033	.000	.003	

\*Investor Owned Hospitals are the reference group

Logistic regression analysis results demonstrate nine out of 15 variables are statistically significant with four being environmental variables: the presence of psychiatric hospitals in a market, the percentage of non-white children in a market, the family median income (SES), and the percentage of NFP hospitals in a market. The remaining four variables are organizational: child psychiatric residency programs, Catholic hospitals, public hospitals, and children's hospitals.

The presence of psychiatric hospitals and percentage of non-white children both have negative coefficients with odds ratios less than one. The odds ratio for the presence of psychiatric hospitals is 0.714 with a 95% confidence interval (0.550 - 0.928). There is a 28.6% reduction in the likelihood of a hospital to offer child psychiatric services when there is a psychiatric hospital present in the market. The percentage of non-white children in a market has an odds ratio 0.987 with a 95% confidence interval (0.980 - 0.993). The interpretation is a one percentage decrease in non-white children in a market results in a 1.3% reduction in the likelihood of a hospital offering child psychiatric services.

The family median income has an odds ratio of 1.023 with a 95% confidence interval (1.013 – 1.034). The interpretation is a \$1,000 increase in the family median results in a 2.3% increase in the probability of hospitals offering child psychiatric services.

The percentage of NFP hospitals was significant but in the opposite direction. The hypothesis predicted a higher the percentage of NFP hospitals in a market, the less likely the provision of child psychiatric services. The results show that hospitals in markets with a higher percentage of NFP hospitals have more than three times greater



probability of offering child psychiatric services. The odds ratio for the percentage of NFP hospitals is 3.185 with a confidence interval of 1.908 – 5.319. A possible explanation is the NFP hospital may have a higher sense of community orientation to offering services identified as unpopular (Horwitz, 2005). In the interest of exploring this variable, a subsequent analysis was done assessing only the presence of NFP hospitals. The results were similar to the main analysis with the exception that secular hospitals and Catholic hospitals are not significant. The results are presented in Appendix D.

The last significant environmental factor, hospital community orientation, was supported in the predicted direction. Hospitals providing child psychiatric services had a high community orientation, 89%, compared with 72% of hospitals not offering child psychiatric services. The odds ratio for the high level of community orientation is 2.058 with a 95% confidence interval of 1.537 – 2.756, indicating an increase greater than two times in the probability of hospitals offering child psychiatric services for hospitals that have a high level of community orientation.

The four significant organizational variables are child psychiatric residency programs, Catholic hospitals, public hospitals, and children's hospitals. The presence of a child psychiatric residency program was significant. One hundred and nineteen hospitals are identified as providing support for this type of residency of which 86 or 72.3% of the 119 hospitals provide child psychiatric services. The remaining 33 hospitals that do not offer child psychiatric services are presumed to be hospitals that support the residency in conjunction with a system-affiliated hospital. The odds ratio of 3.224 and 95% confidence interval (1.802 - 5.766) indicates the presence of a child

psychiatric residency program has an increase greater than three times in the probability of a hospital offering child psychiatric services.

Two hospitals classified by ownership status were found to have an association with offering child psychiatric services. Catholic hospitals were significant with a p-value of 0.059, an odds ratio of 1.714 and a 95% confidence interval (0.980-2.998). Catholic hospitals have a 71.4% increase in the probability of offering child psychiatric services. The second type of hospital based on ownership status is public hospitals. Being a public hospitals has a 78% increase in the probability of offering child psychiatric services based on the odds ratio of 1.781 and 95% confidence interval (1.022-3.104). Public hospitals were significant with a p-value of .042.

The last significant factor, children's hospitals, was supported with a p-value = 0.001. A specialized hospital that focuses on children was anticipated to make these services available. However, as noted earlier, the more likely type of children's hospital are those embedded within a hospital, potentially due to a system affiliation-like set-up that provide support for a service that is identified as not profitable (Horwitz, 2005). The interpretation is a 2.82 increase in the probability for children's hospitals to provide child psychiatric services compared to acute care general hospitals.

The control variables hospital bed size and occupancy rate were significant. The presence of an emergency department was not associated with the provision of child psychiatric services.

The next set of logistic regression results assesses the second analysis, level of hospital commitment. There are fewer significant variables. Part of the explanation may be the smaller size, 670 hospitals versus the 3,860 hospitals in the first model. The Chi-

square is 89.413 with 18 degrees of freedom and a p-value < 0.000. The amount of explained variation for this model is 12.5% as shown in the Cox and Snell R Square. The overall percentage in the classification is lower at 64% than the percentage of prediction of hospitals identified as having high hospital commitment of 65.2%.

Three of the 15 variables are significant with one of the significant variables supported in the predicted direction, system affiliation. The odds ratio for system affiliation is 1.607 with a 95% confidence interval (1.093-2.363). The interpretation is a 60.7% increase in the probability of a hospital offering child psychiatric services when affiliated with a hospital system.

The MSA variable was significant but not as predicted. Non-MSA hospitals were predicted to provide a higher level of services due to a higher community orientation. However, only 14.3% of non-MSA hospitals offered a high level of commitment. Urban hospitals provided the majority of high numbers of psychiatric services. The odds ratio for MSA is 1.974, 95% confidence interval (1.163 – 3.351) and shows a 97.4% increase in the probability of a hospital located in a county identified as a MSA providing child psychiatric services.

Children's hospitals were expected to provide a high level of services but the regression coefficient is negative indicative of a decreased likelihood of a high level of child psychiatric service provision. The odds ratio of 0.448 and 95% confidence interval (0.224 – 0.899) is interpreted as a 55% decrease in the likelihood of a hospital offering a high level of child psychiatric services when they are a children's hospital. Table 12 presents the results from the logistic regression analysis.

Table 12. Logistic Regression Results for Level of Child Psychiatric Services Offered\*

Variables	Coefficients	SE	Wald	P-Value	Odds Ratio	95% Confidence Interval for Odds Ratio
<b>Environmental Factors</b>						
<b>Resource Dependence</b>						
Child Psychiatrists/ 100,000 Youth	-.002	.003	.534	.465	.998	.992 – 1.004
Psychiatric Hospitals	-.303	.203	2.218	.136	.739	.496 – 1.100
Percent Non-white Children	.006	.006	1.225	.268	1.006	.995 – 1.017
Family Median Income	.010	.009	1.318	.251	1.010	.993 – 1.028
<b>Institutional</b>						
Herfindahl Index	.130	.364	.129	.720	1.139	.559 – 2.324
Percent NFP Hospitals	.124	.434	.081	.775	1.132	.483 – 2.651
Community Orientation	-.086	.285	.092	.763	.918	.525 – 1.603
Hospitals in MSA	.680	.270	6.354	.012	1.974	1.163 – 3.351
<b>Organizational Factors</b>						
<b>Resource Dependence</b>						
System Affiliation	.474	.197	5.818	.016	1.607	1.093 – 2.363
Percent Medicaid Patients	-1.027	.717	2.049	.152	.358	.088 – 1.461
Child Psychiatric Residency Programs	.283	.344	.680	.410	1.328	.677 – 2.604
<b>Institutional</b>						
Secular Hospitals	.513	.516	.989	.320	1.670	.608 – 4.588
Catholic Hospitals	.784	.536	2.144	.143	2.191	.767 – 6.258
Public Hospitals	.403	.534	.570	.450	1.497	.526 – 4.263
Children's Hospitals	-.802	.355	5.111	.024	.448	.224 - .899
<b>Control Variables</b>						
Hospital Bed Size	.002	.000	13.512	.000	1.002	1.001 – 1.002
ER	1.533	1.078	2.022	.155	4.631	.560 – 38.299
Occupancy Rate	.016	.529	.001	.975	1.016	.361 – 2.864
Constant	-3.930	1.268	9.604	.002	.020	

IO hospitals are the reference group.

## Summary

The results of this analysis demonstrate some of the variables posited by theory are associated with the provision of child/adolescent psychiatric services. The first model provides support for almost half of the hypotheses. The second model demonstrates limited support with only one variable significant as predicted. A discussion of the results of this analysis and the implications will be in Chapter 6.

## CHAPTER SIX: DISCUSSION

A synopsis of the study is presented in this chapter. The first section provides a brief review of the research questions, conceptual framework, model, and variables selected for this study. The second section presents each hypothesis and a discussion of whether it was supported or not. The third section considers implications of this study. The last two sections address limitations and areas of future research with concluding remarks.

### Research Questions and Conceptual Framework Model

Three research questions are addressed in this research:

1. Which hospital environmental and organizational characteristics are associated with the provision of formalized hospital-based child psychiatric services?
2. Which hospital environmental and organizational characteristics are associated with the extent of formalized hospital-based child psychiatric services provided?
3. Do resource dependence and/or institutional theory contribute toward understanding these relationships?

These questions are applied to a national study population of non-MSA and urban hospitals in the United States, within a conceptual framework that assesses environmental

and organizational factors are associated with a hospital's decision to offer child/adolescent psychiatric services and the level of their commitment. The conceptual framework is based on Resource Dependence Theory and Institutional Theory. Figure 8 shows the conceptual model.

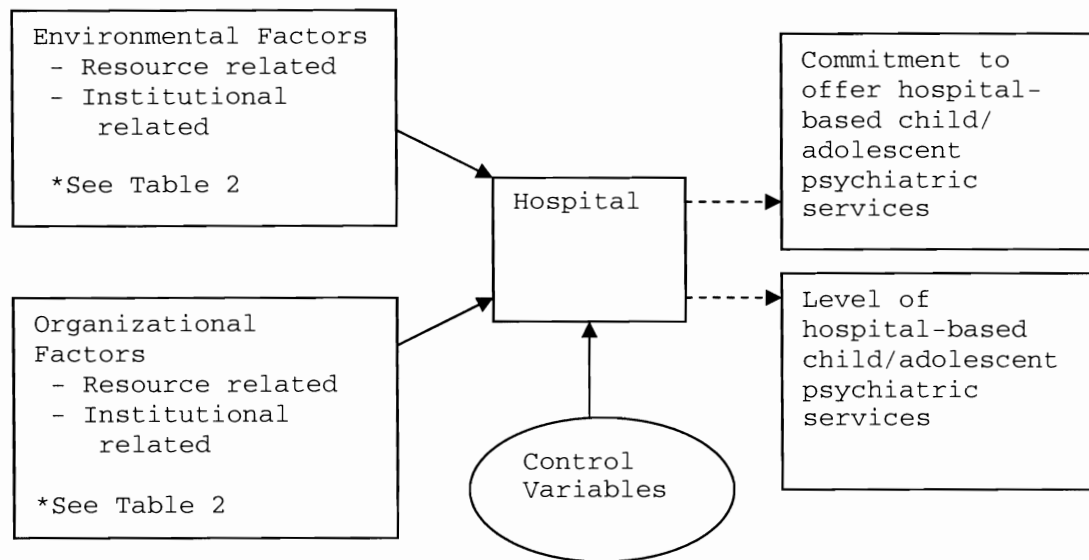


Figure 8. Conceptual Model for Analysis of Hospital Commitment to the Provision of Child/Adolescent Psychiatric Services

#### *Resource Dependence Theory*

Resource dependence theory identifies four factors that are environmental, child psychiatrists/100,000 youth, psychiatric hospitals, ethnicity of children and family median income. Three are organizational factors, hospital system affiliation, percentage of Medicaid patients within a hospital, and child psychiatric residency programs.

#### *Institutional Theory*

Institutional theory focuses on intangible or social and cultural variables. There are nine institutional-based factors. The four environmental factors are competition

(measured with a system-adjusted Herfindahl index), percentage of NFP hospitals, hospital community orientation, and MSA/non-MSA location. The five institutional organizational factors focus on the type of ownership status, investor owned, secular not for profit, Catholic hospitals, and public hospitals. The final organizational factor evaluates the level of specialization, general acute care hospital or children's hospital.

### Hypotheses

A separate discussion of the individual hypotheses for the two analyses will be presented in this section. Table 13 provides a summary of the hypotheses.

Table 13. Summary of Hypotheses for Both Sets of Analyses

Hypothesis	Analysis 1 – Hospital Provision of C/A Psych Services	Analysis 2 – Hospital Commitment to Providing C/A Psych Services
<i>Resource Dependence</i>		
<i>Environmental Factors</i>		
Child Psychiatrist	Not supported	Not supported
Psych Hospitals	Not supported*	Not supported
Ethnicity	Supported	Not supported
SES	Supported	Not supported
<i>Organizational Factors</i>		
System Affiliation	Not supported	Supported
Percent Medicaid	Not supported	Not supported
Child Psych Residency Program	Supported	Not supported
<i>Institutional Theory</i>		
<i>Environmental Factors</i>		
Competition	Not supported	Not supported
Percentage of NFP	Not supported *	Not supported
Community Orient	Supported	Not supported
MSA	Not supported	Not supported *
<i>Organizational Factors</i>		
Catholic	Supported	Not supported
Secular	Not supported	Not supported
Public	Supported	Not supported
Children's Hospital	Supported	Not supported*

\* not supported but significant



### *Provision of Child Psychiatric Services*

The first multivariate analysis assessed the resource dependent and institutional based environmental and organizational factors in hospitals that chose to provide child/adolescent psychiatric services. Three of the 15 hypotheses tested were supported by Resource Dependence theory and four were supported by Institutional Theory.

#### *Resource Dependence Theory*

##### *Environmental factors.*

Resource-dependent environmental hypothesis one evaluates the number of child psychiatrists per 100,000 youth in a market and the association with a hospital's commitment to provide hospital-based child psychiatric services. Child psychiatrists were expected to be indicative of a munificence of patients. This hypothesis was not supported.

Hypothesis 2a: The presence of a psychiatric hospital in a market will be associated with a hospital's commitment to provide child psychiatric services. Psychiatric hospitals are significant, but not in the direction expected. The analysis has a negative coefficient (-0.336) indicative of a substitution effect, not patient or financial munificence. The odds ratio of 0.714 indicates that markets with a psychiatric hospital provide a 28.6% decrease in the likelihood of a general acute care hospitals and children's hospitals offering hospital-based child psychiatric services.

The third hypothesis, 3a, is the percentage of ethnic children in a community will be associated with no hospital commitment to provide hospital-based child psychiatric services. This hypothesis is supported ( $p < 0.001$ ). The negative regression coefficient

and odds ratio of 0.987 are indicative that lower levels of non-white children are associated with hospitals providing child psychiatric services. Fewer non-white children in a market support the literature regarding minority status being associated with lower mental health service utilization and hospitalizations.

Hypothesis 4a: Low SES will be associated with no hospital commitment to providing hospital-based child psychiatric services. The results support that higher family income is associated with hospitals offering hospital-based child psychiatric services. The odds ratio (1.023) support the finding and show a \$1,000 increase in the family median income has a 2.3% increase in the probability of a hospital providing child psychiatric services.

*Organizational factors.*

Resource dependent organizational hypothesis, 5a: System affiliation will be associated with a hospital's commitment to provide hospital-based child psychiatric services, was not supported. The organizational hypothesis, 6a: Hospitals with a higher percentage of Medicaid patients will be associated with a commitment to providing hospital-based child psychiatric services, was not supported.

The last organizational hypothesis, 7a: Child psychiatric residency programs will be associated with a hospital's commitment to providing hospital-based child psychiatric services, was supported. The presence of a child psychiatric residency program more than triples the likelihood of a hospital when choosing to offer hospital-based child psychiatric services.

*Institutional Theory*

There were eight institutional hypotheses tested with half of them environmental-related and the other half organizational. Five of the eight hypotheses were significant, with four hypotheses being supported.

*Environmental factors.*

Hypothesis 8a was competition will be associated with no hospital commitment to provide hospital-based child psychiatric services. Competition, measured using a system-adjusted Herfindahl index, was not significant ( $p = 0.517$ ).

Hypothesis 9a: The percentage of NFP hospitals in the market will be associated with no hospital commitment to providing hospital-based child psychiatric services. The percentage of NFP hospitals ( $p < 0.001$ ) was significant but not as predicted. The percentage of NFP hospitals in a market has more than three times greater likelihood that a hospital will offer hospital-based child psychiatric services. The inclusion of this hypothesis was to test whether the IO/NFP mix affected NFP behavior as Schlesinger et al (1997) intended. Given the larger model which included both IO and NFP, it was felt that a sharper specification was necessary to maintain fidelity to this concept. A subsequent analysis of only NFP hospitals at the market level was conducted and the results were similar to the IO and NFP model. The model with only NFP hospitals uses the public hospitals as the reference group, versus the main analysis which uses IO hospitals as the reference group. Secular and Catholic hospitals are no longer significant when compared to public hospitals.

In the NFP only analysis, the psychiatric hospital odds ratio dropped and the p-value dropped to 0.007. It appears that the addition of IO hospitals dilutes the effect of psychiatric hospitals. A more in-depth analysis of psychiatric hospital ownership was conducted. Knowing the ownership status may provide insight into the impact on surrounding hospitals. In the full database, prior to removal of the psychiatric hospitals for the analysis, there were 45% with public ownership status, 34% with IO ownership status, 17% with secular NFP ownership status, and 3% with Catholic ownership status. With 65% of psychiatric hospitals having a NFP ownership status they would be expected to locate in markets with a higher percentage of NFP hospitals. The location of psychiatric hospitals in markets with existing NFP acute care hospitals could explain why the acute care NFP hospitals would be less likely to offer these services. The results are presented in Appendix D.

Hospital community orientation measures a hospital's level of awareness of the community's health care needs. Hospital organizational characteristics found to be associated with a higher community orientation are size, nonprofit status, system affiliation, and higher level of dependence on managed care (Proenca et al., 2000). Hypothesis 10a assessed a hospital's community orientation will be associated with a commitment to providing hospital-based child psychiatric services. The hypothesis was supported (p-value < 0.000) with an odds ratio 2.058 and 95% confidence interval (1.537 – 2.756). Hospitals with a high level of community orientation have slightly more than two times greater likelihood of offering hospital-based child psychiatric services.

Hypothesis 10b: Non-MSA hospitals will be associated with a commitment to provide hospital-based child psychiatric services. This hypothesis was not supported. The prediction that non-MSA hospitals would provide child psychiatric services was based on the notion that they are the only provider in a market with no other community services available. Of the 1,814 non-MSA hospitals, only 9% or 159 of these hospitals provide child psychiatric services.

*Organizational Factors.*

There are four institutional-related organizational factors of which three are significant. Hypothesis 11a: Catholic hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals. Catholic hospitals were marginally significant at the 0.059 level. The odds ratio indicates that being a Catholic hospital has a 71% increase in the likelihood of offering child psychiatric services. Support of this hypothesis corresponds with the literature that Catholic hospitals provide more stigmatized services than IO hospitals (White et al., 2002; White et al., 2006).

Hypothesis 11b: Secular non-profit hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals. Secular hospitals were not significant, p-value = 0.098. It was speculated that the non significant result occurred due to the presence of the percentage of NFP hospital variable which may have prevented a fair test of the effects of these hospitals. A post analysis was done without the variable percentage of NFP hospitals. The results demonstrate the odds ratio for secular hospitals increased from 1.573 to 2.887 and for Catholic hospitals

the odds ratio increased from 1.714 to 3.091. Both secular and Catholic hospitals had p-values  $< 0.000$  in the model without the percentage of NFP hospital variable. Public hospitals became not significant (p-value = 0.185) with the removal of the percent of NFP hospital variable. See Appendix E for the results.

Hypothesis 11c: Public hospitals will be associated with a greater commitment to providing hospital-based child psychiatric services than IO hospitals. Public hospitals had a positive, statistically significant relationship. The odds ratio is 1.781 with a 95% confidence interval 1.022 – 3.104. Public hospitals are 78% more likely to offer child psychiatric services.

The last hypothesis, 12a, evaluates specialty hospitals. Children's hospitals will be associated with a commitment to provide hospital-based child psychiatric services than general acute care hospitals. This hypothesis was supported with an odds ratio of 2.822. The majority of children's hospitals offering child psychiatric services are identified as a children's hospital within a hospital, 63%. The remaining children's hospitals are freestanding.

#### *Level of Commitment in Providing Child Psychiatric Services*

The second analysis assessed the association of the same set of variables as they relate to the level of hospital commitment. The second model did not perform as well. There is only one Resource Dependence Theory hypothesis supported and two Institutional Theory hypotheses supported. These findings suggest that there may be different factors influencing the decision to offer any services and to strongly commit to this service line. One explanation for the major differences can be the sample size. In

the first model there were 3,860 hospitals, whereas in the second model the sample size dropped to 670 hospitals. Another explanation is the use of the same set of variables that define more broad concepts, like provision of psychiatric services. These same variables do not seem to apply when assessing more specific internal hospital issues of choice and number of services. More hospital specific organization factors may provide a better explanation. Other differences between the two groups will be discussed in depth as it relates to each hypothesis.

### *Resource Dependence Theory*

#### *Environmental factors .*

Hypothesis 1b: Child psychiatrists in a market will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services, was not supported. The number of child psychiatrists does not seem to influence the choice of number of services. It is possible that the number of psychiatrists, child psychiatrists, or pediatricians within a hospital may be a better indicator.

Hypothesis 2b: Presence of a psychiatric or child psychiatric hospital in a market will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services. The hypothesis was not supported. A more direct internal measurement could be the number of psychiatric beds within a hospital.

Hypothesis 3b: The percentage of ethnic children and adolescents in a community will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services. Level of child ethnicity in the community is associated with the provision of services, but administrative decision making regarding the number of

services may be associated with other factors such as the age of the patient population (adolescents) and type of psychiatric diagnosis.

Hypothesis 4b: Low community SES will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services. Community SES was not statistically significant. A more plausible indicator may be the psychiatric DRG reimbursement levels or other financial performance indicators that may have a higher level of association with the level of commitment.

*Organizational factors.*

Hypothesis 5b: System affiliation is associated with a hospital's decision to provide a high level of hospital-based child psychiatric services. Centralizing selected healthcare within a single hospital among affiliated hospitals allows the system to provide a service to a small portion of the community while limiting financial risk (Ramirez, 1992). Centralization of a low-volume service can yield economies of scale that concentrate expertise, improve patient outcomes, which will improve the organizations reputation, thereby allowing it to obtain a larger percentage of the market and increase profit (Ramirez, 1992, p. 8). Both arguments lend support for this significant finding. A hospital with a system affiliation has a 60.7% increased likelihood of providing a high level of child psychiatric services.

Hypothesis 6b: Hospitals with a higher percentage of Medicaid patients will be associated with a decision to provide a high level of hospital-based child psychiatric services. This hypothesis was not supported. A better measure might be the percentage of Medicaid and Medicare patients in a hospital.



Hypothesis 7b: Presence of a child psychiatric residency training program will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services. Child psychiatric residency programs are not associated with the number of services. Further inquiry needs to be done to determine whether the scope of a hospital's child psychiatric residency program or the presence of an addictive services residency has a better association.

### *Institutional Theory*

#### *Environmental factors.*

Hypothesis 8b: Competition will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services. The system-adjusted Herfindahl index did not show any significance in either model.

Hypothesis 9b: The percentage of NFP hospitals in a market will be associated with a hospital's decision to provide a low level of hospital-based child psychiatric services. There is no relationship with the percentage of NFP hospitals in a market and the level of commitment to provide child psychiatric services.

A separate post-analysis removing the percentage of NFP hospital variable was done to assess any changes in the significance of both secular and Catholic hospitals. The removal of the percentage of NFP hospital in the first model resulted in both secular and Catholic hospitals having statistically significant effects with p-values  $> 0.000$ . In the second model, removal of the percentage of NFP hospital variable did not create the same effect. Therefore, that inclusion of the percentage of NFP hospital variable

confounds the effect of specific ownership classes when assessing provision of child psychiatric services, but not the level of commitment.

Hypothesis 10c: Community orientation will be associated with a hospital's decision to provide a high level of hospital-based child psychiatric services. Community orientation is not significant for the level of commitment. Information on the percentage and types of diagnoses of child psychiatric patients may be more influential in the level of commitment. Another possible explanation is the incremental gain in providing one or more services is not supported in the community health assessments conducted by these acute general hospitals. Hospitals may have very different community health assessments that focus on different types of illnesses. It is also possible that there is not enough sensitivity present with the small sample size compared to the larger database.

Hypothesis 10d: Non-MSA hospitals will be associated with a decision to provide a high level of hospital-based child psychiatric services. MSA is significant in the level of commitment with an odds ratio of 1.974. MSA located hospitals have an almost two times higher likelihood of offering a high number of child psychiatric services. The majority, 70.4%, of hospitals located in non-MSA counties that offered child psychiatric services did so at a low level of commitment.

High levels of commitment are shown to provide significantly more substance abuse services, both inpatient and outpatient. Related to the significance of a MSA to a high level of commitment can possibly be explained that in urban areas hospitals there may be more demand for outpatient substance abuse services as compared to non-MSA areas.

*Organizational factors.*

Hypothesis 11d: Catholic hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals. The logistic results are not significant.

Hypothesis 11e: Secular non-profit hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals. This hypothesis was not supported.

Hypothesis 11f: Public hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than IO hospitals. Like Catholic and Secular hospitals, ownership status doesn't result in significant distinctions regarding the level of commitment. It seems that location, MSA, and system affiliation are stronger determinants than ownership status.

Hypothesis 12b: Children's hospitals will be associated with a decision to provide a higher level of hospital-based child psychiatric services than general acute care hospitals. Children's hospitals were significant ( $p$ -value = 0.024) but not in the predicted direction. The negative regression coefficient, -0.802, has an odds ratio of -.802. The odds ratio shows a 19.8% decrease in the likelihood of a children's hospitals to offer a high level of child psychiatric services compared to an acute care general hospital. The specialized status of a children's hospital was expected to provide a high level of child psychiatric services. One possible explanation for the low level of commitment may be associated with substance abuse delivery. Children's hospitals may not have the support necessary to offer this type of psychiatric service delivery.

## Implications of the Study

This next section discusses the implications of the study. Managerial implications will be presented first followed by the policy implications of this study. Theoretical and methodological implications will follow.

### *Managerial Implications*

The dependent variable for this study uses formally identified hospital-based child psychiatric services. Hospital administrators need to remember that hospitals that have not formally identified the provision of child psychiatric services may be delivering psychiatric services to children.

The results reveal few hospitals offer hospital-based child psychiatric services. Hospitals that do provide child psychiatric services generally are large and assigned to a MSA. In addition to hospital size and location, there are differences in ownership status with Catholic, public, and secular hospitals offering a more child psychiatric services than IO hospitals. The lack of previous research studies on formalized child psychiatric service offering prevents a specific statement on the differences in the provision of care for this specific service line based on ownership status.

Hospital administrators need to consider the scope of child psychiatric services delivered. The pattern of psychiatric service delivery for hospitals providing 5 to 6 psychiatric services is easy to discern. Suggesting a specific group of child psychiatric services for a hospital wanting to offer four or fewer services becomes difficult given no discernable pattern from the results. Further investigation into how hospitals select the

types and number of services when offering four or fewer child psychiatric services is required before any comment can be made.

The high level of community orientation in hospitals that offer child psychiatric services indicate the continued use of the community health assessments. However, there is a lack of support for hospital community orientation with the level of commitment. An exploration into the types of community orientation assessments that different hospitals conduct could shed some light on the type and amount of information collected by these assessments. It is possible that each hospital creates and conducts an individual community assessment, rather than using a standardized assessment. Individual assessments lead hospital administrators into very different impressions of community need. In using the AHA survey, the assumption for this study is the identification of a series of community orientation activities with no comment on the type or depth of information obtained. Different assessments can lead to very different conclusions for a hospital administrator.

Community assessments can assist a hospital in defining the level of community demand for certain services. If the community demand for child psychiatric services is present there may be other factors that impose on a hospital's ability to provide these services. The level of reimbursements for child psychiatric services or hospital financial performance indicators may better explain why hospitals are not be able to support an unpopular (Horwitz, 2005) or stigmatized (White et al., 2002; White et al., 2006) service either in full or partially.

### *Policy Implications*

Discussion of policy implications apply to the analysis for hospitals that offer hospital-based child psychiatric services. Policy implications for the hospital level of commitment are difficult to identify given the lack of significant factors. Another limitation when addressing policy implications relates to the lack of an obvious pattern of service provision in hospitals with four or fewer services.

The analysis of hospitals providing child psychiatric services identified that more NFP, particularly Catholic and public hospitals do offer these services. Their status as NFP hospitals should be considered when discussions regarding the tax-exempt status arise. Removal of the tax-exempt status could impact the few hospitals that do offer these necessary services.

Children's hospitals require consideration given the type of children's hospital that offer child psychiatric services. The majority of children's hospitals providing child psychiatric services are children's hospitals nested in a hospital. Belonging to a larger organization has the benefit of providing the level of resources needed to support this unpopular service. Only half of the freestanding children's hospitals offer child psychiatric services and for the 24 hospitals that do offer services only three hospitals seem to have the ability to provide a high level of services. An explanation for the low number of freestanding children's hospitals may be a reflection on the level of reimbursement received for these types of services. It may also be reflective of their non-system like affiliation.

The location of a hospital seems to affect the level of child psychiatric service commitment. Hospitals located in a county identified MSA are more likely to offer 5 to 6 services. The high level of commitment for hospitals located in a MSA indicates more demand for outpatient substance abuse services versus hospitals with a low level of commitment. Of the 281 hospitals in a county identified MSA with a high level of commitment, 49.1% are in MSA's with a population  $\geq 1,000,000$ , 30% in a MSA with a population between 250,000 and 999,999. The remaining 20.9% of the hospitals are located in MSA identified counties with populations  $< 250,000$ . The low level commitment group of county identified MSA located hospitals has 51.3% in a MSA with a population  $\geq 1,000,000$ , 35.7% in a MSA with a population between 250,000 and 999,999 and the remaining 13.1% in MSA counties with populations  $< 250,000$ .

A possible explanation for the difference in outpatient substance abuse services between the two groups of hospitals may be the size of the hospital. Hospitals with more beds may have more resources that can support a higher number of services. Policymakers need to be aware that hospitals in counties identified as MSA's with larger size hospitals appear to offer more outpatient substance abuse services.

The pattern of outpatient substance abuse services varies with regards to a high versus a low level of commitment. One consistent results is the number of hospitals offering inpatient substance abuse services is consistently low. The level of reimbursement or shorter stays to stabilize and move these patients to a different type of facility may explain the limited offering. Further inquiry into an explanation for the limited number of hospitals offering this service is needed.

### *Theoretical Implications*

The two macro-level theories used to identify and discern the factors in this study were useful in the first model, but provided weak support in the second model. In the first model, half of the factors from each theoretical paradigm provided support for the theory-based hypotheses. Even though causation can not be attributed, a trend in both environmental and organizational aspects was identified that can be useful in determining more long term influences in service delivery.

Utilization of the same variables necessary to determine differences in the overall provision of child psychiatric services did not apply when using a refined measure for a specific number of psychiatric services. Both theories can be useful in the second more refined model, but from the results here it seems that a different distinct set of tangible and intangible factors is required. The use of Resource Dependence Theory and Institutional Theory should be applied to more hospital specific environmental and organizational factors when assessing a hospital's decision regarding the number and choice of child psychiatric services.

### *Methodological Implications*

Methodologically, the first model provides insight into 9 factors that are associated with the provision of child psychiatric services. The conclusions drawn can help further a health services researchers understanding of some factors that influence why a hospital might choose to deliver services that are identified as stigmatized and unpopular.



Regarding the level of commitment, identification of not significant factors suggests a different set of factors are needed for this level of analysis. Hospital specific factors may clarify and provide a stronger connection with the offering of specific types and number of child psychiatric services. Discerning the motivating factors that affect a hospital's decision concerning the level of commitment may require primary data collection. Primary data collection can supply insight into the limited pattern of service choice for hospitals choosing fewer than five child psychiatric services and ascertain specific issues that hospital administrators use when deciding the breadth of service delivery once the overall commitment to providing the service is made.

The pattern of services in hospitals with a high level of commitment may be indicative of a more urban location. Exploration into the 24% of non-MSA hospitals providing a high level of child psychiatric services needs further inquiry to determine if their location relative to a MSA is influential. Another issue with the pattern of services seen in the high level commitment group is a lack of congruence with the pattern of psychiatric services identified by Olson (1993). Partial explanation may be due to the date of the AHA data (1988) compared to the year of data used here, 2003. An updated analysis of the most commonly offered services is needed to determine what current patterns are in existence. Olson's (1993) pattern of identification used the general psychiatric services identified in the AHA. This study first identified the provision of child psychiatric services and then identified the specific type of services. It is possible that a hospital decides what psychiatric services to provide based more on adult

utilization or adult and child utilization and the specific number of services are a reflection of adult or adult and child psychiatric service utilization.

Whether the specific service choices are a reflection of adult or adult and child psychiatric service utilization, there may be marginal gains for hospitals with each incremental service. Having marginal gains could account for the decision to offer anywhere from one to six services. Financial performance measures may be necessary to determine influences in the number of child psychiatric services offered.

#### Limitations

There are five main types of limitations, 1) design issues, 2) data issues, 3) sample size, 4) measurement issues and 5) analytic issues. Each of these issues will be addressed at length, respectively.

#### *Design Issues*

A cross sectional design has limitations because the information comes from one year only, 2003. To imply causation, longitudinal data is necessary. Lagging the data by one year, using the AHA 2002 survey, was implemented to adjust and recognize that information from the previous year may influence decisions made by hospital administrators for the following year.

The second design issue is the utilization of the same factors for both analyses. A further detailed examination of variables associated with the six specific psychiatric services is required. Primary data collection will be necessary to discern factors that can influence a hospital administrator's decision in the choice of psychiatric services. In

addition to a different set of variables, exploration into patterns of child psychiatric service types and numbers over time is needed.

#### *Data Issues*

A data limitation when using the AHA survey is a potential response bias. Not all hospitals that indicate the provision of child psychiatric services actually offer these individual services for children specifically. The AHA survey has a separate question for hospitals to indicate that they formally provide child/adolescent psychiatric services. The six individual psychiatric services, listed further down on the AHA survey, are assumed to apply to children and adolescents.

The second data limitation is the lack of community mental health measures on a county level. Different community measures would have been useful for the first model, however finding county level data was difficult so information from the AHA was utilized. Currently, the community mental health measure is the presence of a psychiatric hospital in a county. Actual identification of community mental health centers would have enriched the model. It is possible that inclusion of community mental health centers could have shown a similar negative effect on hospital service provision as did the presence of psychiatric hospitals. Had there been more community mental health centers in the data, it is doubtful that they would have been useful in the second model given the results.

#### *Sample Size*

The first analysis has 3,860 hospitals which provide enough cases to test the variables and find significant results. The second database was significantly smaller, 670

hospitals and had a 50% distribution of the hospitals, which may have been less sensitive when conducting a multivariate analysis.

### *Measurement Issues*

The first measurement limitation is the division of high versus low level of child psychiatric services. Originally a Guttman Scale, which measures intensity of services, was to be applied. Unfortunately, the data did not support such a measurement as reflected in the different service patterns between the high and low level commitment groups. Big differences also exist between the two groups regarding the number of hospitals providing basic services, i.e. inpatient psychiatric care and ER psychiatric care.

Another measurement issue is the aggregation of several variables. Aggregating variables results in loss of information. Aggregating the dependent variable limits information surrounding which services are most likely to be offered among the various numbers of services. A possible explanation for the different psychiatric service patterns in the low level commitment group may be explained by the larger percentage of non-MSA hospitals. There are fewer non-MSA hospitals, 24% in the high level commitment group. The findings may indicate that a separate analysis of urban hospitals versus non-MSA hospitals is required in order to determine whether difference service patterns among hospitals with a high level of commitment versus a low level of commitment exists. Non-MSA hospitals may have a different pattern of service delivery from urban hospitals when four or fewer services are offered.

Two other variables that were aggregated were the psychiatric hospitals and MSA information. Currently, the presence of a psychiatric hospital only indicates that there is

at least one in a county when in fact several counties had more than one psychiatric hospital present. Including the actual number of psychiatric hospitals in a county may have provided different results. The MSA variable in the ARF has 5 different classifications. There are four MSA categories and the fifth category is non-MSA. The MSA variable is binary with the four MSA categories indicated by a one and the non-MSA (non-MSA) category is indicated with a zero.

#### *Analytic Issues*

Analytic issues surround the problem with the multicollinearity between the percentage of NFP hospitals and public hospitals. The high correlation indicates the close proximity of measurement with the two variables. The problem with the multicollinearity was reflected in the different results with inclusion and removal that the percentage of NFP hospital variable had not only on public hospitals, but also on the Catholic and secular hospital variables.

The initial level of missing data for the dependent variable, provision of child/adolescent psychiatric services (12%), left a large number of hospitals for the main analysis, but the effect on the smaller database is unknown. Removal of hospitals due to missing data with the variables in the community orientation was limited through imputation.

The last analytic issue concerns the formalized service recognition which conveys the idea that hospitals are providing these services. However, hospitals that do not formally indicate the provision of services may be providing care to this population of

children without the recognition. Identification formalized service delivery also limits any type of comment on issues of access, quality or outcomes.

#### Future Research

Future research needs to be conducted to determine not only which hospitals offer child psychiatric services but why. A more detailed inspection of the market is required, specifically how to measure county community mental health centers.

The next study may require utilizing data from a few urban areas where more in depth identification of different market and hospital specific data are available when assessing the number of services. Data concerning the incremental reimbursement gains in the different psychiatric services might provide insight into the selection of services.

Continued research into hospital-based provision of child psychiatric services is needed. This study begins to identify variables associated with hospitals that offer child/adolescent psychiatric services. Further investigation utilizing primary data collection from hospital administrators will be necessary to determine variables associated with the number of services, in addition to more community psychiatric services. Once these variables are identified, then long term studies can be done to determine causation.

This study assessed the provision and level of commitment of hospital-based child/adolescent psychiatric services in the United States. Future research needs to expand on this study to better understand a line of service that is increasing in demand (DHHS, 1999). A more comprehensive understanding of the dynamics between the community level of service provision and hospital-based service provision can offer insight not only for hospital administrators and policy makers, but the providers of child

psychiatric care. Once a more thorough level of knowledge is present regarding why an organization would choose to offer this service or not, issues of access, quality and outcomes can then be more readily assessed.

Children's mental health services research is just one small area of mental health research. Some children require this specialized inpatient and outpatient care in order to grow into healthy adults. Lack of community alternatives leaves hospitals supporting these children. Knowing what motivates general hospitals and children's hospitals to offer such services can help determine what communities are most likely to provide these services. The next steps after determining hospital motivating factors are issues of outcome, access, and quality that accompany providing these services.

## Bibliography



## Bibliography

- AHA. American Hospital Association (AHA). 2000. Chicago, Illinois, American Hospital Association.
- AHA. American Hospital Association (AHA). 2001. Chicago, Illinois, American Hospital Association.
- AHA. American Hospital Association (AHA). 2002. Chicago, Illinois, American Hospital Association.
- AHA. American Hospital Association (AHA). 2003. Chicago, Illinois, American Hospital Association.
- AHRQ. Agency for Health Care Research and Quality (AHRQ). 2004. Washington D.C.:AHRQ.
- Bazzoli, G. AHA Child Psychiatric Survey Question. 2004. Personal Communication.
- Bird, H. R., Canino, G., Rubio-Stipec, M., Gould, M. S., Ribera, J., Sesman, M., Woodbury, M., Huertas-Goldman, S., Pagan, A., & Sanchez-Lacay, A. (1988). Estimates of the Prevalence of Childhood Maladjustment in the Community Survey in Puerto Rico. Archives of General Psychiatry, 45, 1120-1126.
- Bloom, B. L. (1977). Community Mental Health: A General Introduction. Monterey, CA.: Brooks/Cole Publishing.
- Burns, B. J. & Taube C.A (1990). Mental Health Services for Adolescents. U.S. Congress Office of Technology Assessment's Adolescent Health Project.
- Burns, B. J. (1991). Mental Health Service Use by Adolescents in the 1970's and 1980's. Journal of the American Academy of Child and Adolescent Psychiatry, 30, 144-150.
- Burns, B. J., Costello E.J., Angold A., Tweed, D., Stangl, D., Farmer E.M.Z., & Erkanli A. (1995). Children's Mental Health Service Use Across Service Sectors. Health Affairs, 14, 147-159.

- Burns, B. J., Teagle, S. E., Schwartz, M., Gold, A., & Holtzman, A. (1999). Managed Behavioral Health Care: A Medicaid Carve-out for Youth. Health Affairs, *18*, 214-225.
- Callahan, J. J., Shepard, D. S., Beinecke, R. H., Larson, M. J., & Cavanaugh, D. (1995). Mental Health/Substance Abuse Treatment in Managed Care: The Massachusetts Medicaid Experience. Health Affairs, *14*, 173-184.
- Catalano, J. J., Libby, A. M., Snowden, L. R., & Cuellar A.E. (2000). The Effect of Capitated Financing on Mental Health Services for Children and Youth: The Colorado Experience. American Journal of Public Health, *90*, 1861-1865.
- Chabra, A., Chavez, G. F., Harris, E. S., & Shah, R. (1999). Hospitalization for Mental Illness in Adolescents. Journal of Adolescent Health, *24*, 349-356.
- Clement, J. P., White K.R., & Valdmanis, V. (2002). Charity Care: Do Not-for-Profits Influence For-Profits? Medical Care Research and Review, *59*, 59-78.
- Costello E.J. (1989). Developments in Child Psychiatric Epidemiology. Journal of the American Academy of Child and Adolescent Psychiatry, *28*, 836-841.
- Costello E.J. & Shugart, M. A. (1992). Above and Below the Threshold: Severity of Psychiatric Symptoms and Functional Impairment in a Pediatric Sample. Pediatrics, *90*, 359-368.
- Cuellar, A. E., Libby, A. M., & Snowden, L. R. (2001). How Capitated Mental Health Care Affects Utilization by Youth in the Juvenile Justice and Child Welfare Systems. Mental Health Services Research, *3*, 61-72.
- Culhane, D. P. & Hadley, T. R. (1992). The Discriminating Characteristics of For-profit versus Not-for-profit Freestanding Psychiatric Facilities. Health Services Research, *27*, 177-194.
- Department of Health and Human Services (1999). Mental Health: A Report of the Surgeon General. Available: [www.surgeongeneral.gov/library/mentalhealth/home.html](http://www.surgeongeneral.gov/library/mentalhealth/home.html) Accessed 9/2005.
- Department of Health and Human Services (2001). Mental Health: Culture, Race, Ethnicity. Available: [www.surgeongeneral.gov/library/mentalhealth](http://www.surgeongeneral.gov/library/mentalhealth) Accessed 9/2005.
- Dickey, B., Normand, S. L., Norton, E. C., Rupp, A., & Azeni, H. (2001). Managed Care and Children's Behavioral Health Services: The Massachusetts Experience. Psychiatric Services, *52*, 183-188.

- DiMaggio, P. J. & Powell, W. W. (1991). The Iron Cage Revisted: Institutional Isomorphism and Collective Rationality in Organizational Fields. In W.W.Powell & P. J. DiMaggio (Eds.), The New Institutionalism in Organizational Analysis (pp. 63-82). Chicago, IL: University of Chicago.
- Dowling, W. L. (2002). Hospitals and Health Systems. In S.J.Williams & P. R. Torrens (Eds.), Introduction to Health Services (6th ed., pp. 202-233). Albany,N.Y.: Delmar, Thompson Learning.
- Draper, D. A., McHugh, M. C., Achman, L., & Kuo, S. (2003). Medicaid Financing of State and County Psychiatric Hospitals (Rep. No. DHHS Pub. No. (SMA) 03-3830). Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration.
- Farmer, E. M. Z., Burns, B. J., Phillips, S. D., Angold A., & Costello E.J. (2003). Pathways into and through Mental Health Services for Children and Adolescents. Psychiatric Services, 54, 60-66.
- Finkelstein, E., Bray, J., Larson, M. J., Miller, K., Tompkins, C., Keme, A., & Manderscheid, R. W. (2002). Prevalence of and Payments for Mental Health and Substance Abuse Disorders in Public and Private Sector Health Plans. In R.W.Manderscheid & M. J. Henderson (Eds.), Mental Health, United States, 2002 (pp. 165-185). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Garralda, M. E. & Bailey, D. (1986). Psychological Deviance in Children Attending General Practice. Psychological Medicine, 16, 423-429.
- Glied, S., Hoven, C. W., Moore, R. E., Garrett, A. B., & Regier, D. A. (1997). Children's Access to Mental Health: Does Insurance Matter? Health Affairs, 16, 167-174.
- Glied, S. & Cuellar A.E. (2003). Trends and Issues in Child and Adolescent Mental Health: Community-based Alternatives to Inpatient Mental Health Care Have Not Emerged to fill in the Gaps for Children. Health Affairs, 22, 39-50.
- Goffman, E. (1963). Stigma: Notes on the management of spoiled identity. Englewoods Cliff, N.J.: Prentice-Hall, Inc.
- Grob, G. N. (1983). Historical Origins of Deinstitutionalization. In L.L.Bachrach (Ed.), Deinstitutionalization (No. 17 ed., pp. 15-29). San Francisco: Jossey-Bass.
- Grob, G. N. (1991). From Asylum to Community: Mental Health Policy in Modern America. Princeton, N.J.: Princeton University Press.
- Grob, G.N. (1994). The Mad Among Us: A History of the Care of America's Mentally Ill. New York, N.Y.: The Free Press.

- Grob, G. N. (2000). Mental Health Policy in 20th-Century America in Mental Health United States 2000 (Rep. No. Dhhs Pub, No. (SMA) 01-3537). Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Office: Center for Mental Health Services.
- Hannan, M. & Freeman, J. (1977). The Population Ecology of Organizations. American Journal of Sociology, 82, 929-964.
- Horwitz, J. R. (2005). Making Profits and Providing Care: Comparing Nonprofit, For-Profit, and Government Hospitals. Health Affairs, 24, 790-801.
- Hurley, R. E. (1998). Have We Overdosed on a Panacea? Reflections on the Evolution of Medicaid Managed Care. In S.M.Davidson & S. A. Somers (Eds.), Remaking Medicaid (1st ed., pp. 20-40). San Francisco: Jossey-Bass.
- Kanter, R. K. & Egan, M. (2003). Utilization of Pediatric Hospitals in New York State. Pediatrics, 111, 1068-1071.
- Kataoka, S. H., Zhang, M. S., & Wells, K. B. (2002). Unmet Need for Mental Health Care Among U.S. Children: Variation by Ethnicity and Insurance Status. American Journal of Psychiatry, 159, 1548-1555.
- Kiesler, C. & Simpkins, C. (1991). Changes in Psychiatric Inpatient Treatment of Child and Youth in General Hospitals: 1980-1985. General Hospital Psychiatry, 14, 156-161.
- Kirkwood, B. J. & Sterne, J. A. C. (2003). Medical Statistics. (2nd ed.) Oxford, UK: Blackwell.
- Knitzer, J. (1982). Unclaimed Children. Washington, D.C.: Children's Defense Fund.
- LeBlanc A.J. (1991). Undercompensated, Unpopular Services in Hospitals: The Case of HIV/AIDS. PhD Pennsylvania State University.
- LeBlanc A.J. & Hurley, R. E. (1995). Adoption of HIV-Related Services Among Urban U.S. Hospitals: 1998 and 1991. Medical Care, 33, 881-891.
- Leslie, D. L., Rosenheck, R. A., & Horowitz, S. M. (2001). Patterns of Mental Health Utilization and Costs Among Children in a Privately Insured Population. Health Services Research, 36, 113-127.
- Lewin Group (1998). Children's Health Insurance Expansions: State Experiences in Developing Benefit Packages and Cost-Sharing Arrangements : Final Report. Paper for the Office of the Assistant Secretary for Planning and Evaluation (ASPE) [On-line]. Available: <http://aspe.hhs.gov/health/reports/benefits/toc.htm>

- Lyles C.A. & Young, J. P. (1987). Hospital Ownership and Psychiatric Services. Journal of Medical Systems, 11, 45-57.
- Manderscheid, R. W., Atay, J. E., Male, A., Blacklow, B., Forest, C., Ingram, L., Maedke, J., Sussman, J., & Ndikumwami, A. (2004). Highlights of Organized Mental Health Services in 2000 and Major National and State Trends in Mental Health United States 2002 (Rep. No. DHHS Pub. No. (SMA) 3938). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Mechanic, D., McAlpine, D. D., & Olfson, M. (1998). Changing Patterns of Psychiatric Inpatient Care in the United States, 1988-1994. Archives of General Psychiatry, 55, 785-791.
- Meyer, A. D. (1982). Adapting to Environmental Jolts. Administrative Science Quarterly, 27, 515-537.
- Meyer, J. W. & Rowan, B. (1991). Institutionalized Organizations: Formal Structure as Myth and Ceremony. In W.W.Powell & P. J. DiMaggio (Eds.), The New Institutionalism in Organizational Analysis (pp. 41-62). Chicago, IL: University of Chicago.
- National Association of Childrens Hospitals and Related Institutions. NACHRI website available at: <http://www.childrenshospitals.net/> Accessed on 2/23/06.
- National Center for Health Statistics (NCHS) (2003). Health, United States 2003 With Chartbook on Trends in the Health of Americans. Hyattsville, MD: Department of Health and Human Services.
- National Center for Health Statistics (NCHS) (2005). Health, United States, 2005 With Chartbook on Trends in the Health of Americans. Hyattsville, MD: Department of Health and Human Services.
- Nicholson, J., Young, S. D., Simon, L., Bateman, A., & Fisher, W. H. (1996). Impact of Medicaid Managed Care on Child and Adolescent Emergency Mental Health Screening in Massachusetts. Psychiatric Services, 47, 1344-1350.
- Norton, E. C., Lindrooth, R. C., & Dickey, B. (1997). Cost-shifting in a Mental Health Carve-out for the AFDC Population. Health Care Financing Review, 1, 185-196.
- Olfson, M. (1993). The Array of Psychiatric Services in General Hospitals. General Hospital Psychiatry, 15, 277-283.
- Pfeffer, J. & Salancik, G. (1978). The External Control of Organizations. New York, N.Y.: Harpers and Row.

- Polit, D. F. & Hungler, B. P. (1999). Nursing Research: Principles and Methods. (6th ed.) Philadelphia, PA: Lippincott.
- Pottick, K., Hansell, S., Gutterman, E., & White H.R. (1995). Factors Associated with Inpatient and Outpatient Treatment for Children and Adolescents with Serious Mental Illness. Journal of the American Academy of Child and Adolescent Psychiatry, *34*, 425-433.
- Pottick, K. J., Warner, L. A., Isaacs, M., Henderson, M. J., Milazzo-Sayre, L., & Manderscheid, R. W. (2002). Children and Adolescents Admitted to Specialty Mental Health Care Programs in the United States, 1986 and 1997. In R.W.Manderscheid & M. J. Henderson (Eds.), Mental Health, United States, 2002 (pp. 314-326). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Proenca, E. J. (1998). Community Orientation in Health Services Organizations: The Concept and its Implementation. Health Care Management Review, *23*, 28-39.
- Proenca, E. J., Rosko, M. D., & Zinn, J. S. (2000). Community Orientation in Hospitals: An Institutional and Resource Dependence Perspective. Health Services Research, *35*, 1011-1035.
- Ramirez, T. L. (1992). Introduction to Multihospital Systems. Topics in Health Care Financing, *18*, 1-23.
- Randolph, R., Slifkin, R. T., Whitener, L., & Wulfsberg, A. (2002). Impacts of Multiple Race Reporting on Rural Health Policy and Data Analysis. North Carolina Rural Health Research and Policy Analysis Publications [On-line]. Available: [http://www.shepscenter.unc.edu/research\\_programs/rural\\_program/wp.html](http://www.shepscenter.unc.edu/research_programs/rural_program/wp.html)
- Ringel, J. S. & Sturm, R. (2001). National Estimates of Mental Health Utilization and Expenditures for Children in 1998. Journal of Behavioral Health Services and Research, *28*, 319-333.
- Roggenkamp, S. D. & White, K. R. (2001). Is Hospital Case Management a Rationalized Myth? Social Science and Medicine, *53*, 1057-1066.
- Roggenkamp, S. D. & White, K. R. (2005). Adoption of Hospital Case Management: Economic and Institutional Influences. Social Science and Medicine, *60*, 2489-2500.
- Schlesinger, M., Dorwart, R., Hoover, C., & Epstein, B. A. (1997). Competition, Ownership, and Access to Hospital Services: Evidence from Psychiatric Hospitals. Medical Care, *35*, 974-922.

- Scott, W. R. (1998). Organizations: Rational, National, and Open Systems. (4th ed.) Saddle River, N.J.: Prentice Hall.
- Shortell, S. M., Morrison, E. M., Hughes, S. L., Friedman, B. S., & Vitek, J. L. (1987). Diversification of Health Care Services: The Effects of Ownership, Environment, and Strategy. Advances in Health Economics and Health Services Research, 7, 3-40.
- Shortell, S. M. (1988). The Evolution of Hospital Systems: Unfulfilled Promises and Self-fulfilling Prophecies. Milbank Memorial Fund Quarterly, 73, 177-214.
- Shortell, S. M., Gillies, R. R., & Devers, K. J. (1995). Reinventing the American Hospital. Milbank Quarterly, 73, 131-160.
- Sontag, S. (1989). Illness as Metaphor and AIDS and Its Metaphors. (1st ed.) New York: Farrar, Straus and Giroux.
- SPSS (2001). Statistical Package for the Social Sciences (Version 11.5) [Computer software]. Chicago, IL: SPSS.
- Steinberg, A. G., Gadowski, A., & Wilson, M. D. (1999). Children's Mental Health: The Changing Interface Between Primary and Specialty Care. In Rockville, MD: AHRQ.
- Stroul, B. A. & Friedman, B. S. (1986). A System of Care for Severely Emotionally Disturbed Children and Youth. Washington D.C.: DHHS.
- Stroul, B. A. & Friedman, R. M. (1996). A System of Care for Children and Adolescents with Severe Emotional Disturbance. (Revised Edition ed.) Washington D.C.: National Technical Assistance Center for Child Mental Health, Georgetown University Child Development Center.
- Substance Abuse and Mental Health Services Administration (SAMHSA). Final Notice Establishing Definitions for 1. children with serious emotional disturbance, and 2. adults with a serious mental illness. 1993. Washington D.C., Federal Register.
- Substance Abuse and Mental Health Services Administration (2004). Office of Applied Studies 2004 National Survey on Drug Use and Health Results. Website [Online]. Available:  
<http://oas.samhsa.gov/nsduh/2K4nsduh/2K4Results/2K4Results.tm#7.23>
- Tabachnik, B. G. & Fidell, L. S. (2001). Using Multivariate Statistics. (4th ed.) Boston, MA: Allyn and Bacon.
- Taber's Cyclopedic Medical Dictionary (2004). Philadelphia, PA: F.A. Davis Company.

- Thomas, C. R. & Holzer, C. E. (1999). National Distribution of Child and Adolescent Psychiatrists. Journal of the American Academy of Child and Adolescent Psychiatry, 38, 9-15.
- Vaccaro, J. (2004). The Forgotten Illness. Modern Healthcare, 34, 18.
- White, K. R. (1996). Catholic Healthcare: Isomorphism or Differentiation? PhD Virginia Commonwealth University.
- White, K.R. (2000). Hospitals Sponsored by the Roman Catholic Church: Separate, Equal, and Distinct? The Milbank Quarterly, 78, 2, 213-239.
- White, K. R. & Begun, J. W. (1998/1999). How Does Catholic Hospital Sponsorship Affect Services Provided? Inquiry, 35 (4), 398-407.
- White, K. R., Roggenkamp, S. D., & LeBlanc A.J. (2002). Urban U.S. Hospitals and the Mission to Provide HIV-Related Services: Changes and Correlates. Journal of Healthcare Management, 47, 27-40.
- White, K. R., Bazzoli, G. J., Roggenkamp, S. D., & Gu, T. (2005). Does Case Management Matter as a Hospital Cost-Control Strategy? Health Care Management Review, 30, 32-43.
- White, K. R., Begun, J. W., & Tian, W. (2006). Hospital Service Offerings: Does Catholic Ownership Matter? Health Care Management Review, (31)2, 99-108.
- Younger, J. B. (1995). Alienation of the Sufferer. Advances in Nursing Science, 17, 53-72.



## Appendices

## Appendix A

Table 14. Descriptive Statistics for Three Imputation Methods

Variables Means (Standard Deviations)	No Missing Data N = 3304	Null Imputation N = 3967	AHA Imputation N = 3860
<b>Independent Variables -Environmental Factors</b>			
Mean Child Psychiatrists/100,000 Youth	13.40 (33.83)	14.71 (37.16)	13.95 (35.27)
Percent with Psychiatric Hospital Present	24%	24%	24%
Mean Percent of Non-white Children	24.48 (19.89)	24.87 (19.95)	24.59 (19.89)
Mean Family Median Income (in 1,000's)	46.39 (11.32)	46.36 (11.17)	46.32 (11.24)
Mean Herfindahl Index	.67 (.32)	.66 (.32)	.67 (.36)
Mean Percentage of NFP Hospitals	64.48 (40.92)	64.00 (40.70)	64.13 (40.90)
Percent High Community Orientation	79%	68%	75%
Percent Hospitals in MSA	53%	53%	53%
<b>Organizational Factors</b>			
Percent Hospitals with System Affiliation	57%	55%	56%
Mean Percent of Medicaid Patients in Hospital	.19 (.18)	.19 (.17)	.19 (.17)
Percent Child Psych Residency Programs	3%	3%	3%
Percent Investor Owned Hospitals	10%	11%	11%
Percent Secular Hospitals	51%	50%	50%
Percent Catholic Hospitals	14%	13%	14%
Percent Public Hospitals	24%	24%	24%
Percent Children's Hospitals	3%	3%	3%
<b>Control Variables</b>			
Mean Hospital Bed Size	179.41 (184.64)	175.37 (181.11)	176.60 (182.30)
Percent Hospitals with Emergency Room	97%	96%	96%
Mean Occupancy Rate	.57 (.20)	.57 (.21)	.57 (.20)

Appendix B  
Table 15. Correlation Matrix For Variables with No Missing Data N = 3304

Variable	Psyca hosp	Psych md	Psych hosp	Nonwht	SES	Comp	Prctn nfp	Corient	MSA	Mhs memb	Prctn mcd	Cresid	IO
Psychhosp	1												
Psychmd	.096**												
Psychhosp	.113**	.447**											
Nonwht	.063**	.403**	.294**										
SES	.209**	.288**	.274**	.006									
Comp	-.15**	-.50**	-.45**	-.38**	-.43**								
Prctnfp	.201**	.079**	.112**	-.07**	.277**	.178**							
Corient	.145**	.059**	.071**	.032	.175**	-.12**	.135**						
MSA	.224**	.366**	.425**	.342**	.563**	-.62**	.227**	.181**					
Mhsmemb	.122**	.167**	.195**	.163**	.229**	-.25**	.261**	.172**	.343**				
Prctnmcd	-.077	.017	-.034	.088**	-.16**	.038*	-.04**	-.07**	-.13**	-.12**			
Cresid	.263**	.177**	.142**	.195**	.059**	-.17**	.053**	.041*	.164**	.045**	.092**		
IO	-.11**	.038*	.056**	.126**	-.03**	-.08**	-.30**	-.04**	.089**	.203**	-.05**	-.05**	-.34**
Secular	.141**	.061**	.051**	-.05**	.177**	-.09**	.654**	.084**	.120**	.053**	-.03**	.050**	-.13**
Catholic	.060**	.060**	.084**	.022	.079**	-.11**	.228**	.079**	.116**	.269**	-.05**	.039*	-.19**
Public	-.13**	-.14**	-.16**	-.040*	-.24**	.258**	-.73**	-.13**	-.29**	-.42**	.119**	.492**	-.04*
Specialch	.227**	.086**	.111**	.148**	.086**	-.14**	.052**	.037*	.153**	.032	.123**	.371**	-.032
Size	.433**	.315**	.340**	.345**	.273**	-.41**	.176**	.172**	.495**	.287**	.035*	.021	-.011
ER	.041*	-.05**	.010	-.032	.024	-.004	.035*	.023	.014	.045**	-.07**	.189**	-.07**
Occup	.215**	.233**	.242**	.216**	.281**	-.35**	.222**	.133**	.362**	.200**	.312**	.189**	-.07**
Variable	Secular	Catholic	Public	Specialch	Size	ER							
Catholic	-.41**												
Public	-.58**	-.23**											
Specialch	.095**	-.046**	-.04**										
Size	.139**	.074**	-.20**	.256**									
ER	.022	.015	-.03	-.037*	.054**								
Occup	.179**	-.04**	-.19**	.144**	.433**	.013							

\* p = 0.05 (2-tailed); \*\* p = 0.01 (2-tailed)

Appendix C

Table 15 Correlation Matrix For Database with Null Assumption for Missing Community Orientation Data N = 3967

Variable	Psyca hosp	Psych md	Psych hosp	Nonwht	SES	Comp	Prctn nfp	Corient	MSA	Mhs memb	Prctn mcd	Cresid	IO
Psycahosp	1												
Psychmd	.067**	1											
Psychhosp	.104**	.496**	1										
Nonwht	.048**	.423**	.334**	1									
SES	.205**	.264**	.300**	.023	1								
Comp	-.14**	-.50**	-.50**	-.40**	-.43**	1							
Prctnfp	.197**	.065**	.114**	-.07**	.279**	-.17**	1						
Corient	.140**	-.01**	.045**	-.00**	.131**	-.05**	.118**	1					
MSA	.207**	.363**	.461**	.354**	.563**	-.63**	.226**	.124**	1				
Mhsmemb	.122**	.136**	.185**	.148**	.218**	-.23**	.252**	.152**	.322**	1			
Prctnmcd	-.010	.047	-.033	.096**	-.15**	.017	-.04**	-.09**	-.11**	-.13**	1		
Cresid	.259**	.162**	.167**	.192**	.060**	-.17**	.052**	.041**	.161**	.049**	.084**	1	
IO	-.11**	.108**	.087**	.151**	-.033*	-.12**	-.29**	-.09**	.112**	.195**	-.04**	-.051**	1
Secular	.138**	.019	.047**	-.06**	.173**	-.07**	.649**	.088**	.109**	.050**	-.04**	.045**	-.369**
Catholic	.061**	.048**	.068**	.007	.078**	-.09**	.238**	.072**	.108**	.262**	-.04**	-.066**	-.148**
Public	-.12**	-.14**	-.17**	-.04**	-.24**	.262**	-.72**	-.08**	-.30**	-.41**	.128**	.039*	-.207**
Specialch	.206**	.066**	.120**	.143**	.081**	-.14**	.052**	.033*	.148**	.032*	.104**	.485**	-.055**
Size	.431**	.287**	.353**	.338**	.277**	-.40**	.169**	.158**	.485**	.289**	.034*	.363**	-.040*
ER	.053**	-.08**	-.023	-.05**	.021	.028	.041*	.098*	-.010	.072**	-.08**	.029	-.069**
Occup	.208**	.214**	.251**	.218**	.288**	-.33**	.218**	.101**	.359**	.176**	.302**	.175**	-.063**
Variable	Secular	Catholic	Public	Specialch	Size	ER							
Catholic	-.403**	1											
Public	-.564**	-.228**	1										
Specialch	.095**	-.038*	-.039**	1									
Size	.125**	.085**	-.185**	.238**	1								
ER	.042**	.028	-.020	-.023	.057**	1							
Occup	.170**	.042**	-.185**	.138**	.423**	.005	1						

\* p = 0.05 (2-tailed); \*\* p = 0.01 (2-tailed)

## Appendix D

Table 15 Logistic Regression - NFP Only Hospitals Providing Child Psychiatric Services

Variables	Coefficients	SE	Wald	P-Value	Odds Ratio	95% Confidence Interval for Odds Ratio
Environmental Factors						
Resource Dependence						
Child Psychiatrists/ 100,000 Youth	-.002	.002	.938	.333	.998	.994 – 1.002
Psychiatric Hospitals	-.375	.139	7.324	.007	.687	.524 – .902
Percent Non-white Children	-.014	.004	15.704	.000	.986	.979 - .993
Family Median Income	.024	.005	18.694	.000	1.024	1.013 – 1.035
Institutional						
Herfindahl Index	.045	.158	.080	.777	1.046	.767 – 1.425
Percent NFP Hospitals	1.205	.278	18.832	.000	3.338	1.937 – 5.753
Community Orientation	.824	.158	27.277	.000	2.280	1.673 – 3.106
Hospitals in MSA						
Organizational Factors						
Resource Dependence System Affiliation	-.133	.120	1.245	.264	.875	.692 – 1.106
Percent Medicaid Patients	-.478	.361	1.756	.185	.620	.306 – 1.257
Child Psych Residency	1.170	.304	14.791	.000	3.222	1.775 – 5.849
Institutional						
Secular Hospital	-.175	.251	.485	.486	.840	.513 – 1.373
Catholic Hospital	-.091	.272	.112	.738	.913	.536 – 1.556
Children's Hospital	1.157	.321	12.967	.000	3.179	1.694 – 5.966
Control Variables						
Hospital Bed Size	.006	.000	225.836	.000	1.006	1.005 – 1.007
ER	.546	.390	1.964	.161	1.727	.804 – 3.707
Occupancy Rate	.588	.322	3.362	.067	1.801	.960 – 3.377
Constant	-5.675	.535	112.635	.000	.003	

\*Public Hospitals are the reference group

## Appendix E

Table 16 Logistic Regression Analysis for Model with Percentage of NFP Hospital Variable Removed\*

Variables	Coefficients	SE	Wald	P-value	Odds Ratio	95% Confidence Interval for Odds Ratio
Environmental Factors						
Resource Dependence						
Child Psychiatrists/ 100,000 Youth	-.002	.002	1.327	.249	.998	.994 – 1.002
Psychiatric Hospitals	-.342	.133	6.624	.010	.710	.547 - .922
Percent Non-white Children	-.016	.003	20.247	.000	.985	.978 - .991
Family Median Income	.026	.005	24.619	.000	1.026	1.016 – 1.037
Institutional						
Herfindahl Index	.115	.147	.625	.433	1.122	.841 – 1.496
Community Orientation	.709	.148	22.951	.000	2.033	1.521 – 2.718
Hospitals in MSA	-.068	.152	.201	.654	.934	.694 – 1.257
Organizational Factors						
Resource Dependence						
System Affiliation	-.122	.118	1.071	.301	.885	.702 – 1.115
Percent Medicaid Patients	-.314	.347	.814	.366	.731	.370 – 1.443
Child Psych Residency	1.457	.290	25.167	.000	4.294	2.430 – 7.588
Institutional						
Secular Hospital	1.060	.238	19.803	.000	2.887	1.810 – 4.605
Catholic Hospital	1.129	.253	19.871	.000	3.091	1.882 – 5.077
Public Hospital	.364	.275	1.755	.185	1.440	.840 – 2.468
Children's Hospital	.873	.308	8.011	.005	2.393	1.308 – 4.380
Control Variables						
Hospital Bed Size	.006	.000	234.029	.000	1.006	1.005 – 1.006
Emergency Room	.358	.354	1.022	.312	1.431	.715 – 2.864
Occupancy Rate	.608	.311	3.825	.050	1.836	.999 – 3.375
Constant	-5.692	.525	117.601	.000		

\* IO hospitals are the reference group

### Vita

Lea Anne Gardner was born on April 20, 1961 in Chicago, Illinois. She currently resides in Charlottesville, Virginia with her two children, John Matthew Harrell and Jean Elizabeth Harrell. She earned her baccalaureate in nursing and psychology from Elmhurst College and a masters of science in public health at the University of North Carolina Chapel Hill in health policy and administration. Lea Anne is a member of Sigma Theta Tau, the national honor society of nursing and Psi Chi, the national honor society of psychology. She has worked as a coronary intensive care nurse, clinical research nurse, clinical nurse coordinator, and research assistant. She has taught a course in health services organizations at Virginia Commonwealth University.