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The Effect of Placement Change on Foster Children's Utilization of Emergency Mental Health Services

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Abstract

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Placement instability is a significant problem within the foster care system. For children who have already been removed from the care of their biological parents, additional caregiver changes can have negative effects. There is evidence that foster children who change placements frequently are more likely than their peers to suffer from emotional and behavioral problems. While researchers have found that children who change placements have an increased likelihood of using outpatient mental health services, little is known about the relationship between placement change and use of crisis or inpatient psychiatric services.

The aim of the present study was to examine the effects of placement change during the first 90 days in foster care on utilization of crisis services and inpatient psychiatric treatment among a sample of 37,699 Californian children and youth who started a new foster care spell between October 1998 and March 2001. The results suggest that the relationship between placement change and use of crisis and inpatient psychiatric services is bi-directional and is dependent on the type of placement change. These findings suggest that foster children with psychiatric problems may be more likely to have certain types of placement changes, and that these changes can be detrimental for their mental health.

Dedication

This dissertation is dedicated to:

Tim
Whether we are residing together or apart, my true place is by your side.

The former and current residents of the Brandywine Treatment Center
Throughout your lives, I hope you are able to find people and places that make you happy.

My parents
You set a wonderful example, and your love and support has helped me overcome the obstacles I faced during graduate school.

Todd
Your enthusiasm when you speak about your studies is inspiring. Where would I be without your sense of humor?

Table of Contents

I. Introduction

The U.S. foster care system is plagued by many problems including both the high rate of mental health problems among foster children and placement instability. Approximately 40-80% of children in the child welfare system suffer from psychiatric disorders (B.J Burns et al., 2004; Clausen, Landsverk, Ganger, Chadwick, & Litronik, 1998; Garland et al., 2001). While the amount of placement instability varies by states and counties, in some cases the rates are quite high (Connell et al., 2006; James, Landsverk, Slyman, & Leslie, 2004). One national study of 725 children in foster care found that 18% of the children had four or more placement changes within three years (Barth et al., 2007).

Mental health problems and placement instability are linked: foster children who have experienced placement instability are more likely than other foster children to show symptoms of mental health disorders (Barber & Delfabbro, 2003; Barber, Delfabbro, & Cooper, 2001; Newton, Litronik, & Landsverk, 2000; D.M. Rubin et al., 2004). While experiencing placement instability may cause some foster children to develop psychiatric problems (Newton et al., 2000; D.M. Rubin, O'Reilly, Luan, & Localio, 2007), children who enter foster care with preexisting mental health problems may be more likely to change placements (Barber & Delfabbro, 2003; Newton et al., 2000).

Due to the high rate of mental health problems among children who have frequent placement changes, it is not surprising that these children use more outpatient mental health care (James et al., 2004) than other foster children. Placement change is a disruptive experience- when children change placements they must break ties with former caregivers, move to a new environment and establish an attachment to their new caregivers. For this reason, it is possible that foster children who experience placement instability are also more likely to experience psychiatric crises and to use emergency mental health services and inpatient care.

Additionally, moves can happen quickly before the foster child or the new foster parents have adequate time to prepare. For children who have already been the victims of abuse and/or neglect, especially those who already have mental health problems, the move could result in a mental health crisis that requires emergency care.

Children change placements for many different reasons and some kinds of placement changes may be worse for a child's mental health than others. For example, moving from a regular foster home to a group home may be more distressing for a child than moving from a regular foster home to his grandparent's house or another form of kinship care. To date, published studies of placement change have not taken the variety of types of changes into account.

Unfortunately, the relationship between placement instability and emergency mental health service utilization has not been thoroughly studied. It is important to examine this relationship for several reasons.

1. If placement change causes crises and service use, then I can note the heightened risk of psychiatric problems and be alert to the increased risk. Early intervention programs can prevent the need for crises to escalate such that crisis services use becomes necessary.

2. Psychiatric emergency services and inpatient care are among the most expensive services in the mental health continuum of care. While they may be necessary for children who are a danger to themselves or others, they are not an optimal form of mental health treatment because they are brief services designed to stabilize crises rather than to treat ongoing, serious mental health problems (American Academy of Pediatrics, 2006; U.S. Public Health Service,

2001, p68). Over-reliance on emergency services is detrimental for children with psychiatric problems and for the mental health system.

3. While children who experience frequent placement changes may be more likely than other foster children to use emergency mental health care, it is also possible that receipt of both outpatient or inpatient care before a child enters foster care could positively impact placement stability by addressing the child's psychiatric distress so that it is less burdensome for the child and his or her foster caregivers.

The goal of this paper is to examine the association between placement instability and emergency mental health service utilization while accounting for the impact of different types of placement changes and children's receipt of mental health treatment before they entered the foster care system. First, I will review the current literature on mental health disorders in foster children, placement instability, and the children's emergency mental health service system. Next, I will describe an analysis of placement change during the first 90 days in foster care and utilization of emergency mental health treatment among a sample of 37,693 California children and youth who started a new foster care spell between October 1998 and March 2001. I will conclude with a discussion of the implications of this analysis and suggestions for future research.

II. Patterns of Mental Health Service Utilization among Foster Children

Relationship between entry into child welfare and mental health service use

The high prevalence of mental health problems among foster children led one researcher to dub the child welfare system a "defacto public behavioral health care system" (Lyons & Rogers, 2004). Research on mental health service utilization of children in foster care has found that foster children account for a substantial proportion of Medicaid mental health claims and expenditures (DosReis, Zito, Safer, & Soeken, 2001; Halfon, Berkowitz, & Klee, 1992; Harman, Childs, & Kellcher, 2000). For example, Halfon et al's (1992) study of Medi-Cal eligible children in California, found that while less than 4% of Medi-Cal eligible children were in foster care, these children accounted for 41% of mental health service users and 43% of mental health expenditures.

It is possible that some of these children ended up in foster care because of their psychological problems. A survey of 17 states by the U.S. General Accounting Office revealed that, in 2001, 12,700 children were voluntarily placed into the custody of child welfare and juvenile justice systems so that the children could receive mental health services (U.S. General Accounting Office, 2003). When Glisson and Green (2006) studied the outcomes of 1249 children who had contact with child welfare and were referred for in-home services, they found that the child's need for mental health services was the strongest predictor of eventual placement in foster care. Children who received treatment for their mental health problems were less likely to end up in foster care than children who did not receive treatment.

Likelihood of Receiving Treatment

Entry into the foster care system does not automatically lead to mental health treatment. There are several factors that influence whether or not a foster child will receive mental health services. These factors are related to the child's characteristics and history, his home and caregivers, and the mental health service system.

Child level characteristics. Foster children with externalizing behaviors (Garland, Landsverk, Hough, & Ellis-MacLeod, 1996), severe pathology (L. K. Leslie, Hurlburt, Landsverk, Barth, & Slyman, 2004) and more placement changes due to behavior problems (James et al., 2004), are more likely to receive mental health treatment than foster children who do not have these characteristics. A study that analyzed mental health treatment episodes of 1352 children in foster care found that the majority of the treatment episodes were used by a small group of severely disturbed children who were more likely than the other youth to have spent time in group homes and hospitals (Blumberg, Landsverk, Ellis-MacLeod, Ganger, & Culver, 1996). These results suggest that the majority of the mental health service use by foster children may be accounted for by a select group of children who have been removed from their home, and who suffer from severe emotional or behavioral problems.

Unfortunately, many of the factors that influence service receipt are unrelated to the child's needs. For example, Caucasian children are more likely to receive treatment than African American (Leslie et al., 2004; Snowden, Evans Cuellar, & Libby, 2003) and Latino (Snowden et al., 2003) children. However, one researcher found that among children who receive publicly funded outpatient mental health services, Asian children are more likely than White children to be referred by child welfare workers (Yeh et al., 2002).

Being older and being a victim of physical or sexual abuse positively predicts service use (Leslie et al., 2004). A study of 1126 children who were in California's Santa Clara County child welfare system in 2004 found that children who were referred for mental health services entered the child welfare system at older ages. The mean age at entry for referred children was 8.9 while the mean age for non-referred children was 6.8. However, the referred children were in the child welfare system for an average of 1.47 years before entering the mental health system (Tweed, Osterling, Hines & Lee, 2007). In contrast to the findings that older children are more likely to use mental health services, there is some evidence that younger children are more likely to use psychotropic medications (Breland-Noble et al., 2004).

Home and family factors. Some research suggests that children in kinship care are less likely to receive public mental health services (Blumberg et al., 1996). Yet these children also tend to have fewer behavior problems than children in non-relative care (Berrick, Barth, & Needell, 1994). Researchers that have controlled for scores on the Child Behavior Checklist (CBCL) have found that children in kinship care are no less likely to access services (Leslie et al., 2004), but once in care they have fewer visits to outpatient mental health treatment providers (Leslie et al., 2000). Leslie and colleagues (2000) speculated that this discrepancy may be caused by the fact that kinship caregivers frequently receive less support from foster care caseworkers than non-relative caregivers. Thus, if a kinship caregiver faces obstacles to taking his or her foster child to outpatient mental health visits, he or she may not receive the help needed to overcome those obstacles.

Besides foster care type, service use is influenced by adults' perceptions of the child's psychological functioning. When a caseworker believes that a child has a serious mental health problem, the child is more likely to be referred to mental health treatment (Courtney, 1998; McCrae, Chapman, & Christ, 2006). Additionally, a retrospective study of receipt of mental health services in the past year by 302 foster children, found that children whose foster parents thought that the child needed mental health treatment and sought advice from a formal source of help were significantly more likely to receive treatment than children whose foster parents did not recognize the problem or take action to secure services (Zima, Bussing, Yang, & Belin, 2000).

Mental health service system factors. Even if a foster parent is aware that a child needs mental health treatment, the probability that the child will receive treatment is influenced by the child's local mental health service system. For example, a national study of 3450 children who had contact with child welfare services found that children without insurance, and children who lived in counties with fewer psychiatrists per child, were less likely to receive outpatient care (Raghavan et al., 2006). Furthermore, the researchers found that children who lived in counties with Medicaid managed care plans that carved out behavioral health care services were less likely to receive inpatient care. This finding may be due to either improved use of outpatient care in behavioral health carve outs, which may cause maltreated children to be less likely to need inpatient treatment, or restrictive policies of behavioral health care carve outs which prevent children from obtaining inpatient services (Raghavan et al., 2006).

Additionally, a child's local mental health service provider may have restrictive policies that make it difficult for the child to access care. For instance, if the child's local provider does not accept Medicaid then the child welfare agency may need to pay for the child's mental health treatment out of its own pocket (Raghavan, Inkelas, Franke, & Halfon, 2007). If the child welfare agency has insufficient funds, it may not be able to pay for as many visits as the child needs. However, coordination between child welfare agencies and mental health agencies can reduce barriers to service use for certain children. Hurlburt and colleagues (2004) discovered that linkages between these two types of agencies at the local level increased the odds that children in the child welfare system with severe mental health problems would receive treatment. These researchers also found that these linkages lead to reductions in racial disparities in mental health service use between African American and White children (Hurlburt et al., 2004). It is possible that when child welfare agencies coordinate with mental health service providers the children who are most in need of mental health care, regardless of race, are the most likely to receive treatment.

Utilization Patterns

The majority of the children in the child welfare system who use mental health services receive outpatient care (Burns et al., 2004; Shin, 2005). Research on these children's rates of outpatient service use has found varying results, in part due to differences in sample size and location. A national study by Barbara Burns and colleagues (2004) found that 22% of children in the child welfare system who demonstrated a need for mental health services had received outpatient care in the last 12 months. However, studies of youth in foster care have generally found higher rates of service use. For example, one study of 406 17-year-old foster youth in Missouri discovered that 52% had received outpatient care in the past year (McMillen et al., 2004). Additionally, an analysis of the mental health utilization patterns of 304 foster children residing in treatment foster care homes or group homes found that 81% of the children in treatment foster care and 93% of children in group care had seen a therapist in the last four months (Breland-Noble, Farmer, Dubs, Potter, & Burns, 2005). The few studies that have examined foster children's lifetime receipt of mental health services have found that as much as 73% (McMillen et al., 2004) to 83% (Hazen, Hough, Landsverk, & Wood, 2004) of these children have a history of outpatient service use.

Estimates of foster children's rates of inpatient psychiatric hospitalization also vary across studies. While Burns and colleagues found that 5% of their sample of children in the child welfare system had received inpatient care in the past year, in Breland and colleagues' study, 6% of children in treatment foster care and 8% of children in group care had been hospitalized in the

past four months. Breland and colleagues may have found higher rates of hospitalization because treatment foster care is designed for children with emotional and behavioral problems and children in group care are more likely to use mental health services (Leslie et al., 2004).

Additionally, while Hazen and colleagues' found that 12% of the 453 foster children in their study had a lifetime history of psychiatric hospitalization, 42% of the 406 foster children in McMillen and colleagues' study had a history of inpatient care. The discrepancy between these results may be due to the fact that all of the children in McMillen and colleagues' sample were 17 and thus they were significantly older than the children in Hazen and colleagues' study. Older children are more likely to be hospitalized.

While many foster children receive mental health treatment, Leathers and colleagues (2009) argue that the quality of care foster children receive is often poor and may not adequately meet their needs. For example, researchers have found that children often have few outpatient visits and that many mental health care providers do not use evidence-based practices (Leathers et al., 2009).

Summary and Implications for Research

Many foster children suffer from mental health problems but some children are more likely to receive treatment than others. The findings that rates of mental health treatment vary by placement type, foster parents perceptions of the need for mental health treatment and county's mental health service systems indicates that changing placements may also affect a child's likelihood of receiving treatment. For example, a child who moves to a new foster home in a county with few psychiatrists, and whose new foster parents do not recognize the child's behavior problems as signs of a mental health problem, may be unlikely to receive mental health care. Additionally, most children in foster care who receive mental health services receive outpatient treatment, thus children who use inpatient care may be a unique group.

III. Placement Instability

Rates of Placement Change and Reasons for Removal

Placement change is a fairly common experience in foster care and many foster children are affected by it. One study of youth in the child welfare system in Rhode Island found that at least 50% of the youth changed placements while they were in foster care (Connell et al., 2006). Additionally, analyses of more than 500 youth in foster care in San Diego county who were followed for 18 months, found that the youth had an average of approximately 3.6 placement changes during this period (James et al., 2004).

Placement changes occur for many reasons. In some areas of the country children are placed in temporary/emergency placements following removal from their biological families and then moved to a more permanent residence (James et al., 2004). Placements that are supposed to be long-term sometimes fail when the foster parents can no longer care for the child due to events in their own lives such as plans to move to another state or death of one of the foster parents. Other placements fail because the foster family is accused of abuse or neglect and any children they are caring for are removed from their home while the allegation is investigated (James et al., 2004).

State policies regarding foster children can also influence the number of homes a child stays in. A unique study by Duncan and Argys (2007) examined how foster care compensation rates (which vary by states and counties) influence placement change. The investigators

examined subsidy rates and placement changes among a sample of 92,078 children from multiple states who entered foster care in 1998. They discovered that children whose caregivers received higher subsidies were less likely to move from their first placement. Furthermore, after controlling for a child's age, race, gender, and whether or not the child had a disability, a $100 increase in the subsidy amount was associated with a 20% decrease in the number of placement changes a child experienced.

While a state or county's particular subsidy rate is not intended to influence placement change, children are often moved in an attempt to comply with policies that are supposed to be in the child's best interest. For example, relative placement and placement in the least restrictive environment are considered to be beneficial to children, and a child may be moved into one of these types of placements if it suddenly becomes available (James et al., 2004). Finally, some children are moved because their behavior is too difficult for the foster parent to cope with. Children who abuse substances, set fires, run away, display inappropriate sexual behavior, and/or refuse to go to school may be especially difficult for foster parents to handle (Russo & Shyne, 1980 as cited in James et al., 2004).

James and colleagues (2004) examined the reasons for placement change in a sample of 580 children ages 2-17 in foster care in San Diego county. The researchers discovered that approximately 70% of the moves were for policy related reasons such as the decision to move a child from a foster caregiver who can only provide for one foster child to a new caregiver that is also willing to take the child's siblings, 8% were for reasons related to the foster family but not to the foster child such as divorce, and 20% of the moves were because the foster parent could not cope with the child's behavior.

Child and Family Characteristics Associated with Placement Instability

Just as some children are more likely to have mental health problems than others, some foster children are more likely to change placements than others. Researchers have identified many variables that are positively correlated with placement instability including: death of the biological mother, chronic family problems, removal because of abuse, biological parents addicted to alcohol or drugs, low biological parental income, first placement in foster care, first few months in foster care, unusual attachment behavior upon separation from biological family, placement with non-relatives, placement in a foster family that has biological children, placement without siblings, foster family does not have outside support, foster parent rejection of the child, and less contact with the case worker. However, these findings have not all been consistently replicated and the relationship between some of these variables and placement instability may be moderated by other factors (Oosterman, Schuengel, Slot, Bullens, & Doreleijers, 2007).

In contrast, researchers have consistently found that older children, and children with behavior problems are more likely to change placements (Oosterman et al., 2007; Proch & Taber, 1985). Additionally, the results of some studies have suggested that children who have had more prior placement changes and children who have been in residential care have a greater risk of placement instability (Oosterman et al., 2007). In a meta-analysis of 26 studies on the reasons for placement breakdown, Oosterman and colleagues (2007) found that the effect size for age from multivariate studies was .06. They also found that the effect sizes for prior institutional care ranged from -.04- .53, previous placements ranged from .00- -.61, and behavior problems ranged from .22-.51.

Placement Type and Instability

Children's experiences in foster care depend heavily on the types of placements they are put into. There are some systematic differences between kinship, non-relative foster placements, and group care, which may influence how stable these placements are overall. For example, compared to non-relative caregivers, kinship caregivers are more likely to be single parents, in poor physical health, and have less previous experience as a foster parent (Barth et al., 2008). However, kinship placements tend to have fewer children living in the home than non-relative placements (Barth et al., 2008), and children in kinship care are more likely to feel that their foster parents care about them (Chapman, Wall, & Barth, 2004). Perhaps for these reasons, kinship care has been found to be more stable than non-relative or group care (Usher, Randolph, & Gogan, 1999; Webster, Barth, & Needell, 2000). It is also possible that kinship caregivers are reluctant to ask for the removal of a foster child because they are afraid that the child will be permanently taken away from the family.

As mentioned earlier, group care is associated with placement instability. There are several potential reasons for this association. First of all, group care is supposed to be the placement of last resort, chosen only when a family-based setting is impossible or unavailable (James et al., 2006). While this policy is not followed all the time, it seems to have some influence on child welfare practice. When James and colleagues (2006) examined the placement histories of 280 children who had spent time in restrictive settings, they found that half of these children were placed in the restrictive setting immediately after entering foster care, and the other half were placed in the restrictive setting after a less restrictive placement failed.

Second, there are many aspects of group care that may seem disagreeable to children and cause the child to dislike the placement. For example, many group care placements are staffed by providers who work in shifts, which may make it hard for children to bond with caregivers. Additionally, group care placements often have rules that are designed to maintain order but are completely unnatural in a family setting. For example, children may have to line up quietly before breakfast or dinner or ask permission whenever they want to enter a room. These rules are often designed to prevent disruptive behavior, but even if a child is disruptive himself, living with other children with emotional and behavior problems can be scary (Hyde & Kammerer, 2009). If a child dislikes a placement, he may be more likely to run away or engage in behavior that requires a placement change.

Finally, some group homes and residential treatment centers are designed to be short-term placements for children with psychiatric problems. Since the goal of these types of placements is to provide mental health care to the children and then transition them to less restrictive settings, they promote placement change. In spite of this fact, these types of placements may be the most stable option for children with emotional and behavioral disorders. Connell and colleagues' (2006) study of children in the Rhode Island child welfare system found that children with mental health problems who were placed in emergency shelters or group care were less likely to change placements than children with mental health problems who were placed in traditional foster homes.

Mental Health Problems and Placement Change

The nature and direction of the relationship between the development of mental health problems and placement change is not clear. There is some evidence that placement change causes mental health problems (Rubin et al., 2007). A national study of the placement stability of

729 foster children that controlled for the children's mental health problems upon entry into care, found that children who never achieved a long-lasting placement had between a 36% to 63% increased risk of behavior problems by their 18th month in foster care (Rubin et al., 2007).

Yet, there is also evidence that mental health problems cause placement instability (Barber & Delfabbro, 2003). An extension of Barber and colleagues' (2001) study that followed the 235 children in foster care in Australia for eight months, found that children who had more conduct problems when they entered foster care were less likely to have a placement that lasted for at least four months (Barber & Delfabbro, 2003). Furthermore, James' (2004) study of placement change among children in San Diego county found that a child's risk of being moved because of his or her behavior was greatest during the first 100 days of foster care. This finding suggests that some children enter foster care with behavior problems that are unmanageable.

The results from Newton, Litrownik and Landsverk's (2000) study of 415 children and youth in foster care in San Diego support both hypotheses. The researchers measured the children's level of psychiatric distress using the CBCL five months after they were placed in out-of-home care and 12 months later. They found that children with externalizing disorders who had scores above the clinical cut off level on one CBCL broadband scale at five months were more likely to change placements than other children in the sample. However, they also found that children who had low CBCL scores after five months in foster care but who experienced five or more placement changes were more likely to have worse scores on the CBCL a year later (Newton et al., 2000).

How does placement change cause mental health problems? Compared to the amount of research on the association between placement change and mental health problems, there is an extreme lack of research on the cause/causes of this association. An examination of the existing research suggests that there are some different theories on the cause of this association and that each theory might explain one piece of the relationship.

For example, a study by Lewis and colleagues (2007) of five and six year-old children found that placement instability leads to deficits in inhibitory control which may in turn lead to behavior problems. Inhibitory control is the ability to hold back a dominant response such as being able to stop oneself from playing with a new toy when one has homework to complete. When the researchers compared the inhibitory control abilities of 33 children who were adopted and who had experienced placement instability, 42 children who were adopted and who *had not* experienced placement instability, and 27 children who had never been in foster care, they found that the children who had experienced placement instability had the worst inhibitory control.

While this finding only indicates that placement instability is associated with problems with inhibitory control, the researchers speculated that placement instability might actually cause deficits in inhibitory control. When they examined factors that might have caused the two groups of adopted children to start out with differences in inhibitory control before they experienced placement changes, they found that either these differences were not significant, or they were not as large a predictor of inhibitory control as placement instability. In this study, inhibitory control ability did not mediate the relationship between placement instability and oppositional behavior. However, several other researchers have found that poor inhibitory control is associated with hyperactivity and conduct problems (Lewis, Dozier, Ackerman, & Sepulveda-Kozakowski, 2007).

While Lewis and colleagues limited their study to the relationship between placement stability and individual behavior, there is some evidence that placement instability leads to mental health problems by altering the child's social environment (Perry, 2006). When children

enter foster care they not only change families, they may also change schools and neighborhoods. These types of changes can lead to disruptions in the child's social network: the number of high quality relationships that the child has with other individuals. Researchers have found that foster children who experience placement instability have weaker social networks than foster children who do not move frequently (Perry, 2006). Furthermore, foster children with stronger biological family networks and foster care networks are less likely to be depressed (Perry, 2006). It is possible that having a strong relationship with one's biological family or foster family may help a child cope with the disruption of a placement change. Although the researchers did not analyze the relationship between placement instability and depression, it seems this relationship may be mediated by changes in the child's social network.

Many children whose social networks are disrupted due to a placement move experience grief over the loss of school friends and possible separation from siblings (Unrau, Seita, & Putney, 2008). Others feel that they no longer have control over their fate and they withdraw or shutdown emotionally. These feelings of grief, the loss of self-efficacy, and tendency to repress one's feelings may lead to depression or other mental health disorders. Additionally, frequent placement changes often make children wary of forming new relationships and harm their ability to trust others (Unrau et al., 2008). When one youth who had been in the California foster care system was asked by a qualitative interviewer about his experience with placement instability he replied,

> "The system got in the way of developing myself and my trust with other people, because I kept on moving so much. I really didn't feel like I could be stable in one place. I felt like if I had a problem I could just move away,- because that's what always happened whether I wanted to or not" (Sanchez, 2004, p6).

Children who are unable to trust others may have a hard time interacting with other people or solving relationship problems, and this lack of social skills may also contribute to the development of psychiatric disorders.

A child may be more likely to develop a psychiatric disorder if he or she is not adequately prepared for the placement change. Sometimes foster children are not told very much about why they are moving or where they are moving to (Palmer, 1996; Unrau et al., 2008). One qualitative study of the experiences of 20 children who were placed in foster care for the first time found that many children were unaware that they would be entering foster care until the day they were taken from their biological families (Mitchell & Kuczynski, 2010). It is possible that children who are moved abruptly have a harder time becoming part of a new family. Researchers have found that children whose parents prepare them for their entry into foster care are less likely to experience placement instability (Palmer, 1996).

After a child has entered foster care, speedy placement transitions that are full of uncertainty may also cause children to become anxious and may make it harder for them to adjust to new circumstances. Additional research is needed on whether lack of preparation by foster parents and case workers also contributes to frequent instability for foster children who change placements after entering the foster care system.

How do mental health problems lead to placement instability? While placement instability may cause children to develop psychiatric disorders, it is also possible that children who enter foster care with mental health problems may be so difficult to care for that a single caregiver cannot manage them for more than a few years, and thus these children undergo

frequent placement changes. A study of 117 three-six year-old children who entered either regular foster care or multidimensional treatment foster care found that after six months, the caregivers of children in regular foster care became increasingly stressed in response to the child's behavior problems (Fischer & Stoolmiller, 2008). Additionally, an Illinois state-wide study of placement disruption in foster care found that more than 75% of foster children's most recent moves occurred because the foster parent wanted to stop caregiving. The most common reason for foster parents' desire to quit was that they felt they could not handle the child's behavior problems (Zinn, Decoursey, Goerge, & Courtney, 2006).

Many foster parents may not have the time or the resources that are needed to care for children with psychological problems. Compared to the general population of parents in the United States, foster caregivers are more likely to be older, have fewer years of education, and live in poverty (Barth et al., 2008). A study of foster parents in Illinois found that 46% of the sample were single parents, more than 50% were employed, and 54% had their own children living in the home (Zinn et al., 2006). The demands of work, other children, and the stress of coping with poverty may make it difficult for foster parents to provide the extra attention and appropriate discipline techniques that children with emotional and behavioral disorders often require.

Foster caregivers are also less likely to be committed to children with behavior problems (Lindheim & Dozier, 2007). It is possible that when caregivers are less committed to the children they do not make an effort to make the children feel like part of the family. A study by Sonya Leathers (2006) of 179 12-13 year-olds found that family integration mediated the relationship between disruptive behavior and placement change. In this study, family integration was defined as the foster child's feeling that he/she belonged in the foster home.

Placement Change and Health Service Utilization

Frequent placement changes may not only cause psychiatric distress among foster children, if the children are already in treatment, frequent changes may disrupt their relationships with physical and mental health care providers. Additionally, frequent changes can cause lapses in insurance coverage (Libby et al., 2006), and foster caregivers who will have to cover the entire cost of a child's medical care may not wish to take the child to treatment unless the child desperately needs it. Furthermore, many foster parents may not be aware that their foster child has mental health problems until the child begins to exhibit symptoms of psychiatric distress. When children change placements their medical history may be incomplete (Leslie, Kelleher, Burns, Landsverk, & Rolls, 2003; Raghavan et al., 2007) and many child welfare agencies do not require mental health screenings when the child moves (Raghaven et al., 2007).

Thus, foster children may be more reliant on emergency care. A year-long study of 2358 children in foster care in Philadelphia, and another year-long study of 8716 foster children in Washington state both found that increases in the number of foster care placements a child had was related to increased rate of emergency department use (Almegren & Marcenko, 2001; Rubin, Alessandrini, Feudtner, Localio, & Hadley, 2004). Additionally, the Washington state study found that foster children with personality, depression, and other mood disorders had higher odds of ER use than foster children with health problems. This result was surprising, because chronic health conditions are the most frequent reason that children who are not in foster care visit the ER.

Few researchers have examined the relationship between foster care placement change and mental health service utilization. One exception to this trend is a study by Sigrid James and

colleagues (2004) of a cohort of 570 foster children in San Diego. The results suggested that the number of placement changes during the 18-month study period was a significant predictor of the number of outpatient mental health visits, with children who changed placements frequently receiving more outpatient care. Additionally, children who changed placements because their foster parent could not handle their behavior had a 48% increase in their rate of outpatient visits compared to children who changed placements due to other circumstances. In fact, in the first three months following a behavior-related placement change, the children's rate of outpatient mental health service use almost doubled (James et al., 2004).

While these results suggest that placement instability is linked to increased use of emergency department care and outpatient mental health care, little is known about how placement change influences the use of psychiatric crisis services and hospitalization. One study of 1635 children in foster care in Philadelphia found that children who changed placements frequently had greater odds of using costly mental health services (Rubin et al., 2004). This finding suggests that these children might have greater odds of using inpatient psychiatric care because this service is one of the most costly forms of mental health care.

A study by Park and Ryan (2009) found that a history of psychiatric hospitalization influences placement stability for children in foster care. The authors examined the mental health treatment and foster care records of a sample of 5978 children from Illinois who entered out-of-home care between July 1997 and June 2001. White children who had a history of psychiatric hospitalization prior to entry into foster care were more likely to have three or more placements than youth who had not been hospitalized. Meanwhile, African American children who had a history of psychiatric hospitalization were less likely to achieve permanence, which was defined as family reunification, adoption, or subsidized guardianship. One limitation of this study is that they examined mental health treatment records up to two years prior to the child's entry into foster care. Given the long duration of time that could occur between the child's inpatient stay and their experience of placement instability, it is not clear that the experience of being hospitalized in and of itself influences the child's number of foster homes.

Summary and Implications for Research

Placement change can occur for many reasons one of which is that a child's mental health problems are too difficult for a caregiver to cope with. Research supports both the hypothesis that children with mental health problems are more likely than other foster children to change placements, and the hypothesis that children who change placements frequently are more likely to develop mental health problems than other children. Placement type has been found to be associated with the likelihood of placement change. Children who change placements frequently may rely on emergency care for mental health treatment. Yet the relationship between placement instability and mental health service use has not been systematically investigated.

IV. Emergency Mental Health Care for Children

While foster children who change placements frequently may be at higher risk of using emergency mental health care than other children, overall, only a small proportion of children nationwide use this service. During the 1990s approximately 1.6% (Sills & Bland, 2002) to 5% (Grupp-Phelan, Harman, & Kelleher, 2007) of all pediatric visits to emergency departments nation-wide were by children who needed treatment for mental health problems. However, between 1993-2001 the number of pediatric mental health visits increased (Grupp-Phelan et al.,

2007; Sills & Bland, 2002), especially among minorities, teenagers, females, and children and youth living in the Northeast and Midwest (Sills & Bland, 2002). This increase has been attributed to many factors including declines in the number of public psychiatric hospitals and psychiatric beds (Geller & Biebel, 2006; Hughes, 1993), shorter lengths of stay on inpatient psychiatric units (Geller & Biebel, 2006), lack of availability of outpatient mental health care (Christodulu, Lichenstein, Weist, Shafer, & Simone, 2002; Edelshon, Braitman, Rabinovich, Sheves, & Melendez, 2003), lack of insurance (Hughes, 1993), and increases in referrals from schools (Christodulu et al., 2002).

Etiology of Psychiatric Emergencies

Most children do not bring themselves to psychiatric emergency services (PES), instead they are brought by their parents or other caregiving adults who cannot cope with their behavior (Halamandaris & Anderson, 1999). Suicidal ideation or attempt is the most common reason for a child psychiatric emergency. When Peterson and colleagues (1996) studied the presenting problems in 1436 consecutive pediatric psychiatric emergency room visits they found that 47% of the visits were for suicidal ideation or attempts. Risk factors for suicidal behavior include underlying mental health disorders such as major depression, conduct disorder and anxiety disorders (Baren et al., 2008). Substance abuse (Baren et al., 2008) and family dysfunction are also common risk factors (Josepho & Plutchik, 1994; Morano, Cisler, & Lemerond, 1993).

Many pediatric mental health emergencies are also caused by drug and alcohol abuse (Baren et al., 2008). In 2006, youth ages 12-17 made approximately 58, 428 visits to the emergency department for illicit drug use, and 52,342 visits for alcohol abuse (SAMHSA, 2008). In addition to the physical effects of a drug or alcohol overdose such as unsteady motor movements and unconsciousness, overdoses can produce mental effects such as displaying symptoms of psychosis and aggressive or violent behavior (Baren et al., 2008).

In fact, violent behavior is another common reason that youth are brought to the emergency department (Baren et al., 2008). One study of involuntary psychiatric examinations conducted in Florida between 2000-2004 found that 15% of the examinations were for children. Additionally, most of these examinations were initiated by law enforcement officials and approximately 29% of the children examined displayed danger to others or danger to themselves and others (Christy, Kutash, & Stiles, 2006).

Finally, many visits to pediatric psychiatric emergency services are for issues that are routine or do not require immediate action. One study of 1524 PER visits by children under 18 living in Philadelphia found that 40% of the visits were for non-urgent issues such as school refusal, verbal threats to harm self or others (as opposed to actions), and referrals for mental health treatment. The authors of this study speculated that the non-urgent visits were due to a lack of community-based services that were able to meet the children's needs (Edelshon et al., 2003).

Goals of Psychiatric Emergency Services

While the nature of psychiatric emergency services varies across health care systems, the goal of all of these types of services is to evaluate the crisis situation, stabilize the child, connect the child with the appropriate level of mental health treatment, and avoid hospitalization if possible (Christy et al., 2006). In some cases, the child may need to be medically-stabilized before a thorough evaluation can take place (Baren et al., 2008). For example, children who have attempted to harm themselves often have serious wounds or internal gastrointestinal bleeding due

to poisoning (Baren et al., 2008), while children who have overdosed on drugs or alcohol may be unconscious or delirious.

Types of Services

While much of the research on psychiatric emergency services has focused on services provided in the emergency room, these services are actually provided in a variety of modalities and settings such as: mobile teams, home-based services, office-based treatment, and even institutions. Allen (1999) argues that many psychiatric emergency services developed sporadically as a means to fill the gap between inpatient and outpatient care in local mental health systems. He criticizes the field of psychiatric emergency services for being "haphazard in their planning and organization (Allen, 1999, p715)." While this criticism may be true, Goldman (1988) has found that crisis services have several common characteristics such as:

- They are available seven days a week and 24 hours a day.
- They serve small numbers of children and the length of treatment is short.
- Treatment is offered in the least restrictive setting the child can cope with and families are involved whenever possible.
- Staff members tend to be highly skilled. They are often accommodating, devoted to their work, able to develop rapport swiftly, and able to work as part of a team.
-Crisis programs tend to be part of bigger mental health agencies that offer a continuum of services.

Many of these characteristics can be seen in the various models of crisis services described below.

Mobile Crisis. Mobile crisis teams are groups of two or more mental health service professionals who are able to travel to homes, schools, or other settings within the community in order to meet an individual in crisis at his current location and provide assessment and possibly intervention services. These teams often work in conjunction with the police force: They can be summoned to assist the police in dealing with individuals who are suspected of having a mental illness, or to provide therapeutic support to individuals affected by death or disaster. One of the advantages of mobile crisis teams is that they are able to assist individuals who may not be able to transport themselves to the hospital or other local mental health services. Furthermore, by providing assistance in the community they are able to observe aspects of individual's surroundings that may contribute to the current crisis situation. They also have the opportunity to interact with the individual in crisis' social network and provide education about mental illness. Finally, mobile crisis teams often have strong connections with local mental health service agencies, and by referring their clients to these agencies the teams may be able to avoid unnecessary hospitalizations (Zealberg, Santos, & Fisher, 1993).

Home-based Services. Research on home-based services suggests that they often focus on changing family dynamics. For example, the state of New York developed a home-based crisis intervention service that was modeled on Homebuilders family preservation program (Snowden et al., 2003). In New York, crisis service workers help parents develop better parenting skills and improve family communication (Bishop & McNally, 1993; Snowden et al., 2003). Similarly, the Eastfield Ming Quong mental health center in Santa Clara County California developed an in-home treatment program for adolescents that is based on structural family therapy. Crisis services workers in this program meet with the family for a six to ten hour assessment session in which they evaluate the family context and challenge the family to restructure its dysfunctional relationships (Seelig, Goldman-Hall, & Jerrell, 1992).

Crisis Residence/Respite Programs. Although it is important to address family dynamics that may be related to a child's crisis, in some cases the child and the family are in a state in which they cannot cope with one another long enough to address their problems. In these instances, crisis residence/respite programs may be beneficial to the child. These programs are basically short-term foster care- the children are removed from their current homes and placed in families, group homes, or residential treatment centers (Baker, Archer, & Meinick, 2004; Schweitzer & Dubey, 1994). The type of mental health treatment provided and the average length of stay vary across programs. Descriptions of crisis residence/respite programs in New York and Long Island indicate that the programs allow for close supervision and evaluation of the children in crisis, and that children are not allowed to stay for longer than two to three weeks (Baker et al., 2004; Schweitzer & Dubey, 1994). Some of the advantages of these programs are that they avert hospitalization while providing respite to the child and family members (Schweitzer & Dubey, 1994).

Hospital-based Programs. In some communities, hospitals have 23 or 72 hour beds that are available for children in crisis (Allen, 1999). Thus the child can stay in the hospital for a short period of time until his or her crisis is stabilized. While the child is staying in the hospital, this service is considered a form of crisis care rather than an admission to an inpatient psychiatric unit.

Crisis Services and Foster Care

To date there has been little research focused on foster children's use of crisis services. One exception is the work by Lyons and colleagues on Illinois' Screening, Assessment and Support Service (SASS) for foster children. This service provides assessment and crisis intervention services for foster children in acute psychiatric distress, as well as post-discharge services for foster children who have recently been released from inpatient psychiatric treatment. The goal of SASS is to avoid inappropriate hospital admissions and long lengths of stay for this high-risk population (Lyons & Rogers, 2004). Research on the SASS program has found that children who are hospitalized following the use of crisis services are more likely to be placed in residential care than children who are not hospitalized (Park, Jordan, Epstein, Mandell, & Lyons, 2009). This finding suggests that being hospitalized may lead to more restrictive placement changes.

In a recent study of the predictors of recurrent crisis episodes among 1362 children who were referred for SASS services, Park, Mandell and Lyons (2009) found that 45% of the children had a second crisis episode. The majority of the second crisis episodes occurred within six months of the first crisis. Predictors of recurrent crisis episodes included being female, having suicidal ideation during the first crisis, and having problems in many different areas of life. Children who were in kinship care at the time of their first crisis were less likely to have a second episode, but the opposite was true for children who were in residential placement. Finally, children who had three or more placement changes were significantly more likely to have recurrent crises than children whose placements had been more stable. This finding supports our hypothesis that placement instability is associated with use of emergency mental health care.

Inpatient Psychiatric Hospitalization

Crisis service providers attempt to avoid hospitalizing children whenever possible because inpatient psychiatric hospitalization is the most restrictive and the most expensive

service in the continuum of mental health care for children and adolescents (Burns, Hoagwood, & Mrazek, 1999). The service utilization data in this dissertation is from the late 1990s. During this time period children who were hospitalized for mental illness showed increasing rates of severity and, perhaps due to the advent of managed care, much shorter lengths of stay (Case, Olfson, Marcus, & Siegel, 2007; Olfson, Gameroff, Marcus, Greenberg, & Shaffer, 2005).

Anand Chabra and colleagues (1992;1999) studied children and adolescents' hospitalization patterns in California during 1992 and 1994. These researchers found that 8.1% of the hospitalizations of children ages 6-12 in 1992 were for mental illness, the average length of stay was 20.2 days, and that the costs of treating these children exceeded $85 million (Chabra, Chavez, & Harris, 1999). However, adolescents were even more likely to be hospitalized for mental illness and their stays in the hospital were more expensive. In 1994, 14.8% of the hospitalizations for children ages 10-19 were for psychiatric diagnoses, the average length of stay was 10.9 days and the cost of their treatment was more than $300 million (Chabra, Chavez, Harris, & Shah, 1999).

Research on predictors of hospitalization has found that children with mental illnesses that can cause impulsive and dangerous behavior are more likely to be hospitalized. Among children who present to emergency services, children with mood and psychotic disorders, children who are violent, and children who are both suicidal and violent have greater odds of being placed on an inpatient unit (Gutterman, 1998; Gutterman, Markowitz, LoConte, & Beier, 1993).

Demographic characteristics such as gender, age and race also play a significant role in children and adolescents' likelihood of being hospitalized. Chabra and colleagues found that among children ages 6-12, boys had a higher likelihood of being hospitalized than girls, but among adolescents, the reverse was true (Chabra, Chavez, & Harris, 1999; Chabra, Chavez, Harris et al., 1999). Additionally, among both latency-age children and adolescents, boys were more likely than girls to be hospitalized for impulse control and disruptive behavior disorders, and White youth were more likely to be hospitalized than Latino and Asian youth (Chabra, Chavez, & Harris, 1999; Chabra, Chavez, Harris et al., 1999). While there were no differences in the risk of hospitalization among White and Black latency-age children, White adolescents were also more likely to be hospitalized than Black adolescents (Chabra, Chavez, & Harris, 1999; Chabra, Chavez, Harris et al., 1999). The finding that Latino and Asians are less likely to be hospitalized is similar to results from Snowden and colleagues' (2008) study of crisis service utilization, which discovered that Latino and Asian youth in California were less likely to use the more intensive form of crisis services. However, in contrast with Chabra and colleagues findings, Snowden and colleagues (2008) found that Black youth were more likely to use mental health crisis services.

Inpatient Psychiatric Hospitalization and Foster Care

There is some evidence that children who undergo inpatient psychiatric treatment are more likely to enter foster care than children who do not use this form of treatment. When Park and colleagues (2007) examined the outcomes of 1890 children ages 6-15 who received inpatient psychiatric treatment in Pennsylvania between 1999-2001, they found that 26.5% of the youth ended up in foster care within 4 years following their hospitalization. Furthermore, most of these children entered foster care within two years after discharge.

Once children enter foster care, they may be more likely to use inpatient psychiatric treatment than non-foster youth. An analysis of Medicaid claims for mental health services

delivered to children in California in 1988, revealed that while foster children represented only 4% of Medicaid-eligible children, they accounted for 27% of the inpatient psychiatric hospitalizations (Halfon et al., 1992).

John Lyons and colleagues have spent several years studying the predictors of inpatient psychiatric hospitalization among children in foster care who are referred to Illinois' SASS program. Lyons and colleagues have found that, similar to non-foster youth, foster youth who are suicidal, dangerous, impulsive and displaying symptoms of psychosis are more likely to be hospitalized than foster youth without these characteristics (Leon, Uziel-Miller, Lyons, & Tracy, 1999; Snowden et al., 2003). Furthermore, children with developmental delays and learning disabilities are more likely to have multiple hospitalizations (Romansky, Lyons, Lehner, & West, 2003).

However, Lyons and colleagues have also found that factors besides the child's mental health predict hospital admission. For example, suicidal and dangerous children who live in families with high rates of dysfunction are more likely to be hospitalized than children who are suicidal and dangerous but whose families are more stable (Snowden et al., 2007). Additionally, crisis workers who perceive that a caregiver is not very knowledgeable about the child in crisis are more likely to hospitalize the child. Children who are involved in systems besides child welfare such as special education or juvenile justice are also more likely to be hospitalized (He, Lyons, & Heinemann, 2004), while children who live in group homes and residential treatment centers and children who live in rural areas are more likely to have more than one inpatient psychiatric stay (Romansky et al., 2003). Not surprisingly, children who do not receive many hours of follow-up treatment after their first hospitalization are more likely to be re-hospitalized than children who receive more post-discharge services (Romansky et al., 2003).

Summary and Implications for Research

Most children are brought to the attention of emergency mental health care providers due to suicide ideation, drug and alcohol abuse and/or violent behavior that their adult caregivers cannot cope with. The goals of these services are to stabilize the children and prevent further harm from occurring. Although there are many types of crisis services, foster children's use of these services has not received much attention in the research literature, with the exception of research on children who are referred to the Screening Assessment and Support Service (SASS) program.

Lyons and colleagues' studies of foster children in the SASS program are informative, but they are based on small samples living in Illinois and thus may not be applicable to children living in other states. Additionally, while Park and colleagues discovered that children with a history of psychiatric hospitalization are likely to end up in foster care and to experience placement instability, in these studies there were large gaps of time between the children's receipt of inpatient care and their entry into foster care. Thus it is not clear that the mental health crisis that lead to their need for inpatient care was related to their entry into foster care and subsequent placement instability. It could be that there is a third mediating variable that is related to both inpatient use and placement instability.

There are many reasons for suspecting that placement instability is directly associated with higher rates of emergency mental health service use. First of all, foster children who change placements frequently have higher rates of mental health problems and are more likely to use outpatient care than other foster children. If these children are more likely to use outpatient care then they may be likely to use inpatient care as well. They will be especially likely to use

inpatient care if, as Leathers and colleagues 2009 have found, the outpatient care that they receive is unsatisfactory.

Second, changing placements can be very disruptive for a child. In some cases the change may occur quickly before the child is prepared, and the child may be forced to move away from family, friends, his local school. Additionally, if the child is receiving mental health care, a move might disrupt the child's relationship with his or her therapist. This kind of transition could cause psychiatric distress that could require immediate treatment.

Finally, when foster children change placements their medical history is often incomplete (Leslie, Kelleher, Burns, Landsverk, & Rolls, 2003; Raghavan et al., 2007). If a child moves to a new family and his new caregivers are unaware that the child has mental health problems they will not seek out treatment. Thus, the child's problems may fester until they reach crisis proportions.

Due to the fact that children in group care often utilize more mental health treatment than foster children living in other settings (Leslie et al., 2004), the type of placement a child moves to may influence his or her likelihood of receiving of inpatient mental health care.

However, it is also possible that using emergency mental health services will predict placement change. Children who use emergency mental health care have severe mental health problems and children with mental health problems are more likely to experience placement instability (Barber & Delfabbro, 2003; Newton et al., 2000). Also, many pediatric mental health emergencies involve violent behavior on the part of the child, and research has suggested that foster parents are less committed to children with behavior problems (Lindheim & Dozier, 2007). Furthermore, psychiatric emergencies are very stressful, and foster parents often have fewer resources than parents in the general population (Barth et al., 2008). Thus, following a psychiatric emergency, foster parents may decide that they are unable to care for the child and request a change in placements.

Prior research has found that foster children who are hospitalized after a crisis are more likely to be placed in residential care than children who are not hospitalized (Park, Jordan, Epstein, Mandell, & Lyons, 2009). When a child is suicidal or dangerous enough to require emergency mental health care, the child's case manager may decide that the child should be moved to a group home or residential treatment setting because these settings provide more boundaries and supervision than traditional family homes. Additionally, the case manager may be reluctant to move the child to a family setting. Therefore, use of emergency mental health services may influence certain types of placement changes more than others.

The aim of the present study was to examine the association between placement change during the first 90 days in foster care and utilization of crisis services and inpatient psychiatric treatment. I hypothesize that placement change will predict use of emergency mental health services. I also hypothesize that use of emergency mental health services will predict placement change, and that the relationship between emergency mental health service use and placement change will vary by type of placement change.

V. Methods

Data

The data consisted of Medi-Cal paid claims and foster care placement records. The Medi-Cal claims were for mental health services delivered to youth under age 18 between July 1, 1998 and June 30, 2001, and they were provided by the California Department of Mental Health.

These data files included variables measuring client age, gender, ethnicity, diagnosis, Medi-Cal eligibility code and a unique client identifier. For each service encounter, in addition to client characteristics, the data files reported service type (psychiatric hospitalization, crisis service, day treatment, or outpatient visit) dates, number of units, provider number, cost, and county of responsibility.

The foster care placement records were for all Californian children and youth under age 18 who started a new foster care spell between July 1, 1998 and June 30, 2001, and they came from the California Department of Social Services Child Welfare Services Case Management System. Child welfare workers use this system to record the case histories of their clients, and the California Department of Social Services has an ongoing contract with University of California-Berkeley Center for Social Services Research to monitor and analyze the data entered into the Case Management System. The child welfare records included the start and end dates of foster care spells, and the types of placements (kinship, nonkinship, congregate care, other) in which the child lived.

These data were originally merged and compiled for a report on how the California mental health service and foster care systems interact with and influence foster children's access to mental health care (Libby, 2004). Children who are in the child welfare system are automatically eligible for Medi-Cal (Geen, Sommers, & Cohen, 2005), and the Medi-Cal eligibility code on the Medi-Cal records indicated whether or not the child's mental health services were being funded by the child welfare system. An analyst at the California Department of Mental Health attempted to create a dataset for the report by matching Medi-Cal records containing child welfare eligibility codes with the corresponding child welfare records using Medi-Cal identification numbers and social security numbers. However, in many cases the analyst could not find the corresponding records in the CWS/CMS system.

In order to overcome this hurdle, the investigators requested the help of another team of researchers at Chapin Hall at the University of Chicago. The two datasets were submitted to Chapin Hall researchers, who used probabilistic matching techniques to merge the files. Files were matched using Medicaid-ID number, social security number, name, address, gender, date of birth and ethnicity. This process was successful in finding a matching child welfare record for more than 95% of children and youth where the mental health billing code indicated foster care placement (Libby, 2004). Once the data files were merged a new unique identifier was made for each client and the original identifying information was destroyed.

Sample

From this merged dataset I drew a sample of 37,693 foster children reflecting our interest in how children's experiences of placement change during foster care are related to their use of emergency mental health services. The sample consisted of: (1) children ages 0-18 who started a new foster care spell between October 1, 1998 -March 30 1999, October 1, 1999- March 30 2000, and October 1 2000-March 30 2001, and (2) whose foster care spell lasted for at least 90 days. The 90-day time period was chosen to insure that if a child had a placement change and used psychiatric emergency care, these two events were close enough in time that the placement change could have contributed to the child's need for emergency mental health care. I was concerned that if I chose a shorter interval I would not capture enough crisis or inpatient visits because these events are uncommon, while if I chose a longer interval I would capture emergency mental health visits that occurred several months after the child's last placement change and were thus unlikely to be related to the move. I excluded children whose foster care

spells began after March 30th, because I would not have had 90 days worth of data for these children.

I restricted the timing of the beginning of the foster care spell to October so that I could control for children's use of mental health services in the three months prior to the beginning of their spell in the analyses. Due to the fact that our mental health service records were only available from July through June of each year, if I had included spells that started in August, some of the mental health service data would have been censored.

Analysis

My interest was in the relationship between placement change and use of emergency mental health services (crisis mental health services or psychiatric hospitalization) during a foster care spell. Crisis services are immediate mental health interventions that are designed to stabilize the child and, if possible, prevent hospitalization. Placement change can occur either before or after a child receives crisis mental health services or inpatient care. It is possible that placement changes put children at risk for a future psychiatric emergency that requires crisis or inpatient care. It is also possible that children who need crisis services or psychiatric hospitalization are at risk for subsequent placement changes.

When I tested whether placement change leads to future crisis service use or psychiatric hospitalization, placement change was the main independent variable and either crisis service use or psychiatric hospitalization was the dependent variable. When I examined whether use of crisis services or inpatient care were risk factors for future placement change, then either crisis service use or inpatient care was the independent variable and subsequent placement change was the dependent variable.

Furthermore, in some of the analyses, I distinguished between three kinds of placement change (more restrictive, lateral or less restrictive). More restrictive change was defined as movement from kinship care to family foster care or group care, and movement from family foster care to group care. Less restrictive change was defined as movements in the opposite direction (see Figure 1). Lateral change was defined as movement between the same type of placements. This classification scheme is consistent with the Restrictiveness of Living Environments Scale (Hawkins et al., 1992), which was used in James, Landsverk's and Slymen's (2004) study of placement change in foster care.

Each type of placement change was a single categorical variable. In some of the analyses predicting service use these variables were included as independent variables. When I did a series of analyses predicting type of placement change either more restrictive change, lateral change, or less restrictive change was used as the dependent variable.

I examined type of placement change, because I hypothesized that certain types of changes would be more detrimental to a child's mental health and, thus, these changes would be more likely to be associated with emergency mental health service use than other types of changes. For example, more restrictive changes (as they are coded in the data) involve movement from kinship homes into homes with strangers or movement into group homes. Leaving one's kin for a strange family or leaving a family setting for a group home in which there are more children and staff who work in shifts rather than a "mother or a father" could be especially traumatic for a foster child. In contrast, less restrictive changes may not be as difficult. These types of changes involve leaving a group home for a family setting or moving into kinship care, the opportunity to live with a family or to return to one's kin may make the child happy and mitigate the stress associated with moving.

Furthermore, I also hypothesized that use of crisis services or psychiatric hospitalization would be more likely to predict more restrictive placement changes than lateral or less restrictive changes. If a child's mental health problems are so severe that he needs emergency mental health care then it is probable that if the child changes placements he will be moved to a more restrictive setting such as a group home where he can receive more supervision and structured care.

My control variables were child demographics and use of outpatient, day treatment, crisis and inpatient mental health services before the foster care spell. I included these variables because I hypothesized that they might influence utilization of emergency mental health services and/or placement change. A full list of the variables and how they were coded is provided below. A few of the demographic variables were not included in the multivariate analyses because they were not available for children who did not use mental health services.

Main Variables of Interest

*Use of Crisis Services in Foster Care***.** In California there are two types of crisis services covered by Medi-Cal: Crisis Intervention Services and Crisis Stabilization Services. Crisis intervention services are designed for less acute crises and are provided in the community. They include assessment, evaluation, collateral care, and psychotherapy, and are intended for clients who need urgent assistance but whose crisis is not severe enough to warrant confinement. Crisis stabilization services are designed for more acute crises. They are provided in a hospital program or 24-hour health care facility, and are designed to alleviate the need for inpatient care. Crisis stabilization services are longer and more intense, and they are intended for clients presenting a higher level of risk to themselves and to the community. More than 90% of services provided in California during the study years were crisis intervention services (Snowden, Masland, Libby, Wallace & Fawley, 2008). This dichotomous variable was coded yes if the child used either crisis intervention or crisis stabilization services during his or her first 90 days in foster care.

Inpatient Stay. This dichotomous variable was coded as a yes if the child was hospitalized for treatment of a psychiatric condition during his or her first 90 days in foster care.

Placement Change Variables

While there are many types of foster care placements in the child welfare system, our dataset only included three categories- kinship care, foster care, and congregate care. The foster care category included Foster Family Agency placements. The congregate care category included both residential and group care placements. Although psychiatric units in hospitals are sometimes considered foster care placements in research on placement change, for the purposes of this study a hospital stay was not counted as a change in placement. Additionally, I did not examine children's individual placement histories. Instead, I focused on whether or not children changed placements and the types of placement changes they experienced.

Placement Change. This dichotomous variable was coded yes if the child changed placements at any time during his first 90 days in foster care.

More Restrictive Placement Change. This dichotomous variable was coded yes if the child either a: moved from kinship care to a non-relative placement during his first 90 days in foster care, b: moved from kinship care to congregate care during his first 90 days in foster care, or c: moved from a non-relative placement to congregate care during his first 90 days in foster care.

Lateral Placement Change. This dichotomous variable was coded yes if the child had a placement change to a similar form of care during his first 90 days in foster care such as a: a move from one kinship placement to another kinship placement, b: a move from one non-relative placement to another non-relative placement, or c: a move from on congregate care setting to another congregate care setting.

Less Restrictive Placement Change. This dichotomous variable was coded yes if the child either a: moved from congregate care to a nonrelative placement during his first 90 days in foster care, b: moved from congregate care to kinship care during his first 90 days in foster care, or c: moved from a non-relative placement to kinship care during his first 90 days in foster care.

Control Variables

Demographic Variables.

Gender. This variable was coded categorically with a 1 indicating that the child was male. The gender of six children in the sample was unknown and these children were largely excluded from the analyses.

Age. There were four variables for age, *SpellAge* which listed the child's age at the start of the spell and ranged from 0-18 (Babies under 1 were coded as 0), and *age0-5*, *age6-11*, and *age12-18*, categorical variables which were coded as a 1 if the child was in the specified age range and 0 if the child was in a different age range.

County of Residence. This variable was also categorical and each county was given a unique numeric identifier. The largest county 37 had 12,491 children and youth and the smallest county 3, had one youth.

Year of observation. This variable indicated the year in which the spell was started: 1998, 1999, 2000, or 2001.

Disability Status. Some of the children and youth in the sample qualified for Supplemental Social Security (SSI) payments because they had a physical or mental disability that inhibited their ability to partake in normal activities for their age group. This variable was coded as 1 (yes) if the child or youth qualified for SSI. This variable was included because children who qualify for SSI often have high mental health service utilization rates (Farmer et al. 2001). Information regarding disability status was only available for children who used mental health services, so it was not included in the multivariate analysis.

Mental health service utilization in the 90 days prior to entry into foster care.

I wanted to control for use of mental health services prior to foster care entry because I hypothesized that children who were already in the mental health system would have more detected mental illness and a greater disposition to use services, and would be more likely to use emergency mental health services in foster care. I also hypothesized that these children would be more likely to have placement changes because prior research has suggested that children with mental health disorders are more likely to change placements (Barber, Delfabbro, & Cooper, 2001; Newton, Litronik, & Landsverk, 2000; Rubin et al., 2007).

Prior Outpatient. This dichotomous variable was coded as a yes if the child used any outpatient specialty mental health services in the 90 days before he or she entered foster care.

Prior Day Treatment. This dichotomous variable was coded as a yes if the child attended a day treatment program in the 90 days before he or she entered foster care.

Prior Crisis Services. This dichotomous variable was coded as a yes if the child used either crisis intervention or crisis stabilization services in the 90 days before he or she entered foster care.

Prior Inpatient Stay. This dichotomous variable was coded as a yes if the child was hospitalized for treatment of a psychiatric condition in the 90 days before he or she entered foster care.

Mental health service utilization during foster care.

I examined use of outpatient and day treatment services during foster care in our bivariate analyses because I wanted to see if children who use emergency mental health care are also engaged in more preventative mental health care. If they are not, and placement change is linked to emergency mental health service use, then providing outpatient or day treatment care before or immediately after a change occurs may be a means of avoiding the need for emergency care. I also suspected that children who used emergency mental health care during foster care would be more likely than other children to use outpatient and day treatment care during their spell. I did not include these variables in the multivariate analysis due to concerns about collinearity.

Outpatient. This dichotomous variable was coded as a yes if the child used any outpatient specialty mental health services during his or her first three months in foster care.

Day Treatment. This dichotomous variable was coded as a yes if the child attended a day treatment program during his or her first three months in foster care.

Statistical Methods

Pearson's chi-square was used for the bivariate analyses and logistic regressions with robust standard errors were used for the multivariate analyses. In our sample, crisis service use may have occurred prior to or following a placement change. Additionally, because some placement changes may be more traumatic than others, I hypothesized that the relationship between crisis service use and placement change might alter depending on the type of placement change (more restrictive, less restrictive, or lateral). Therefore, I conducted the multivariate analyses in a series of steps that took into account both the timing of crisis service use in relation to placement change and the type of placement change. Due to the small number of youth who used psychiatric emergency services, Native and Asian ethnicity was combined with the Other ethnicity category. I used robust standard errors which adjust if estimates are slightly incorrect due to unidentified error in the logistic model (Freedman, 2006).

The first regression analyzed whether placement change was associated with crisis service use regardless of whether the placement change happened either *before or after* the crisis visit. I did this regression in order to confirm global association before I investigated whether there are specific relationships between the timing of and type of placement change and crisis service use.

In the next step, I determined whether specific types of placement changes (more restrictive, less restrictive, or lateral) predicted subsequent use of crisis services. To determine whether crisis visits followed placement change, I created a subsample for whom crisis visits could not precede placement change by eliminating 808 children who had crisis visits before their placement changes. I also excluded 318 children who had placement changes, but whose type of placement change was not recorded in the data.

In the third set of regressions I examined whether crisis visits predicted subsequent placement changes when demographic and mental health service utilization variables were controlled. Separate regressions were conducted for the type of placement change (any type, more restrictive, less restrictive, lateral) and the 195 children who had placement changes prior to crisis visits were excluded from these analyses.

The multivariate analyses that examined the relationship between placement change and inpatient hospitalization were conducted using the same series of steps. Because very few children in the 0-5 age category were hospitalized, a continuous variable for age was included in the regressions rather than the categorical variables for age.

The first regression examined the relationship between placement change and hospitalization regardless of timing of the placement change. The second regression determined whether certain types of placement changes were predictive of later hospitalization. The 332 youth whose type of placement change was unknown and 91 youth whose placement changes all occurred after their hospitalization were excluded from the analysis. The third set of regressions analyzed whether psychiatric hospitalization lead to subsequent placement changes. The 332 youth whose type of placement change was unknown and the 127 youth who changed placements prior to their hospitalization were excluded. The analyses were preformed with STATA statistical software package.

In all of the regressions the standard errors were also adjusted for clustering of youth within counties. I also conducted four regressions with county fixed effects in order to determine if policy differences between counties had a large influence on the relationship between placement change and use of psychiatric emergency services (see Apendix 1). In the first regression I analyzed whether placement change at any time during a spell predicts use of crisis services. In the second regression I analyzed whether use of crisis services during a foster care spell predicts subsequent placement change. Our results were similar to the same analyses conducted without county fixed effects, however, the odds ratios for both placement change and crisis service use were smaller (Placement Change: 4.40 vs. 5.08 Crisis Service Use: 2.75 vs. 4.04). In the third regression I examined whether placement change predicts psychiatric hospitalization and in the fourth regression I examined the influence of psychiatric hospitalization during a foster care spell on subsequent placement change. The odds ratio for placement change in the third regression was slightly higher than in the same analysis without county fixed effects (4.09 vs. 3.87). The odds ratio for hospitalization in the regressions with and without fixed effects were practically the same (1.50 vs. 1.60).

More than sixteen counties were dropped from the analyses of the influence of placement change on use of emergency mental health services because the children in these counties did not use emergency mental health services. Furthermore, in order to explain the results of the regressions with county fixed effects I would have to examine characteristic differences between the counties that might influence placement change and/or use of emergency mental health services, and I do not have this data. Due to these limitations, and the fact that regressions with county fixed effects did not alter the significance or direction of influence of our main variables of interest, I decided not to use county fixed effects in our main analyses.

VI. Results

Sample Description: All Foster Youth

Descriptive information regarding the entire sample is shown in Table 1. The racial demographics of the sample were as follows: Hispanic (39%), White (32%), Black (24%), Asian (3%), and Native American (1%). There were slightly more females (51%) than males (49%), and the mean age was approximately 6- years-old at the start of the spell. Most of the samples' foster care spells occurred in 1999 (34%) and 2000 (32%). A smaller percentage of children had their spell in 1998 (18%) and 2001 (16%). The difference in these percentages may be due to the fact that there was six months of foster care data for 1999 and 2000 and only three months for 1998 and 2001.

As shown in Table 2, only 5% of the youth received any mental health care in the 90 days prior to their foster care spell. Of the youth that received services, 90% had an outpatient visit, 7% had a day treatment visit, 24% had a crisis visit and 15% had a psychiatric hospitalization. Almost one-fifth of the sample (19%) received mental health care during the first 90 days of their foster care spell. Of these youth, 94% had an outpatient visit, 7% had a day treatment visit, 17% had a crisis visit and 4% had a psychiatric hospitalization.

Information about placement change is shown in Table 3. After entry into foster care, 53% of the children and youth had at least one placement change. The average number of changes for children who moved at least once was 1.34. Thirty percent of the sample had at least one less restrictive change and 25% had at least one lateral change. More restrictive changes were not as common. Only 7% of the sample had a more restrictive change.

Subsample: Youth who use Crisis Services While in Foster Care

The demographic information for children and youth who used crisis services during their foster care spell is shown in Table 1. Compared to the entire sample, the group of children who used crisis services had significantly more White (38% vs. 32% X^2= 22.03 p<.001) and Native American youth (2% vs. 1% X^2=6.63 p=.01), and there were significantly fewer Hispanic children (33% vs. 39% X^2=18.40 p<.001). Furthermore, the children who used crisis services were significantly older when they started foster care- their mean age at entry was 10.52 (t=-28.48, p<.001). However, there were no significant differences in the years in which the foster care spells took place.

Crisis service users were significantly more likely to use mental health treatment in the 90 days prior to their entry into foster care (24% vs. 4%, X^2= 1023.82 p<.001) than the rest of the sample (Table 2). They had higher rates of outpatient (21% vs. 4%, X^2= 782.92 p<.001), day treatment (4% vs. 0.2%, X^2=382.63 p<.001), crisis services (8% vs. 0.6%, X2=815.61 p<.001) and inpatient care (7% vs. 0.5%, X^2= 774.72 p<.001). All of the children and youth in the sample were more likely to use mental health treatment after starting their foster care spell, but crisis service users also had higher rates of outpatient care (66% vs. 16%, X^2=2009.45 p<.001) and day treatment (21% vs. 0.7%, X^2=3791.73 p<.001). While crisis service users were more likely to receive inpatient care during their foster care spell than children who did not use crisis services (14% vs. 0.3%, X^2=2839.78 p<.001), only 14% were hospitalized. Slightly more than one fourth (27%) of children who used crisis services had more than one crisis visit.

Table 3 shows that approximately 83% of the children who used crisis services during their foster care spell also changed foster care placements. The percentage of crisis service users who had at least one placement change (83% vs. 53%, X^2=455.24 p<.001) was significantly

higher than the percentage of children in the entire sample who changed placements. Additionally, children who used crisis services were significantly more likely to have all types of placement changes- more restrictive (14% vs. 6%, X^2=102.00 p<.001), lateral (39% vs. 24%, X2=130.60 p<.001), and less restrictive (53% vs. 29%, X2=306.96 p<.001). Among children who changed placements at least once, children who used crisis services had an average of 1.56 changes which was significantly higher than the average for rest of the sample (sample average: 1.34, t=-10.87, p<.001).

Subsample: Youth who were Hospitalized in Foster Care

Less than 1% of the entire sample, 281 children and youth, were hospitalized during foster care. The demographic information for this group is shown in Table 1. Slightly more than half of these children (54%) were female. Children who were hospitalized were significantly more likely to be White (40% vs. 32%, X^2=7.14 p=.008) and significantly less likely to be Hispanic (31% vs. 39%, X^2=8.46 p=.004) than children who were not hospitalized. Furthermore, children who used inpatient care were significantly older when they started their foster care spell- their average age was 12.18 years (t=-18.78, p<.001).

Information about the mental health service history of children who were hospitalized is shown in Table 2. Similar to youth who used crisis services, youth who used inpatient care were significantly more likely to receive mental health treatment in the three months prior to their entry into foster care. In fact, 41% of youth who were hospitalized had outpatient visits prior to their spell, while less than 5% of youth who were not hospitalized utilized this service (X^2=847.26 p<.001). The percentage of children and youth in the inpatient group who utilized day treatment prior to foster care entry was fairly low (6%) but still significantly higher than the rest of the sample (0.3%, X^2=294.90, p<.001). Nearly a fifth of children who were hospitalized used crisis services (20%) and inpatient care (19%) prior to foster care entry. In contrast, only 1% of children who were not hospitalized used crisis services before entering foster care (X^2=833.87 p<.001) and 0.6% utilized inpatient care (X^2=1.4e p<.001).

Youth who were hospitalized had the highest rates of mental health service use during their foster care spell. Almost all of these youth (94%) received outpatient services while only 17% of youth who were not hospitalized visited outpatient providers (X^2=1.1e p<.001). Youth who were hospitalized were also significantly more likely to use day treatment (17% vs. 1% X^2= 515.19 p<.001) and crisis (62% vs. 3%, X^2=2.8e, p<.001) services. In fact, 33% of the youth who were hospitalized used crisis services more than once during their foster care spell. Additionally, 22% of youth who were hospitalized had more than one inpatient stay. Youth who were hospitalized spent an average of 15 days in the hospital.

Like youth who used crisis services, youth who were hospitalized were significantly more likely to change placements (79% vs. 53% X^2=80.48 p<.001) than the rest of the sample. Additionally, among youth who changed placements at least once, youth who were hospitalized had a higher average number of placement changes than youth who did not receive inpatient psychiatric care (2.00 vs. 1.34, t=-15.06, p<.001) (Table 3). Youth who were hospitalized had significantly higher rates of more restrictive (30% vs. 6% X^2=246.37 p<.001), and lateral (58% vs. 25% X^2=169.68 p<.001) changes. However, unlike youth who used crisis services, youth who were hospitalized were significantly less likely to have less restrictive placement changes than the rest of the sample (20% vs. 30% X^2=15.37 p<.001).

Multivariate Analyses

Predictors of Crisis Service Use.

Placement Change

There was a strong association between crisis service use and placement change (Table 4). Children who changed placements had five times greater odds of using crisis services than children who did not change placements (OR=5.08, p<.001). However, when timing of the change was considered, the type of change was significant (Table 5). Children who had more restrictive placement changes had almost three times greater odds of using subsequent crisis services (OR=2.73, p<.001) and children who had less restrictive changes had half the odds of using these services compared to children who did not change placements (OR=0.49, p<.001).

Prior Treatment

Day treatment visits (OR= 4.48, p<.001), crisis service use (OR=2.85, p<.001) and psychiatric hospitalization (OR=2.43, p<.001) in the 90 days prior to the start of the foster care spell all significantly increased the odds of crisis service use during the spell (Table 4). However, in the regression that controlled for type of placement change prior to the crisis service visit, crisis service use prior to the start of the spell was no longer significant (OR=1.90, p=.113) (Table 5).

Demographics

In the analysis of the association between placement change at any time during the foster care spell and crisis service use (Table 4), race was not significantly associated with use of crisis services. In the regression that controlled for type of placement change (Table 5), African American, and Asian children did not have significantly different odds of using crisis services than White children. However, Hispanic ethnicity was significant. Compared to White children, Hispanic children had lower odds of using crisis services (OR= 0.61, p<.001). Additionally, children under five (OR=0.48, p<.001) and children ages 6-11 (OR=0.59, p<.001) were significantly less likely to use crisis services than children ages 12-18 (Table 5). Entering foster care in 2001 was associated with higher odds of using crisis services compared to starting a foster care spell in 1999 (OR=1.81, p=.003) (Table 5).

Crisis use as a Predictor of Placement Change.

Children who had a crisis service visit during their foster care spell had significantly higher odds of having a subsequent placement change than children who did not have a crisis visit (OR=4.04, p=.006) (Table 6). However, while crisis service use during foster care was a significant predictor of subsequent lateral (OR=1.47, p<.001) (Table 8) and less restrictive placement changes (OR=4.19, p=.002) (Table 9), it was not a significant predictor of more restrictive changes (OR=1.06, p=.660) (Table 7).

Predictors of Psychiatric Hospitalization.

Placement Change

Children who changed placements during their foster care spell had 3.87 greater odds of having an psychiatric hospitalization than children who did not change placements (p<.001)

(Table 10). Furthermore, children who had more restrictive and lateral placement changes had significantly higher odds of a subsequent hospitalization during their foster care spell than children who did not change placements (More Restrictive OR=3.09, p<.001; Lateral OR=2.22, p<.001). The opposite was true for children with less restrictive placement changes. These youth were significantly less likely to be hospitalized than children who remained in the same home for the first three months of their foster care spell (OR=0.58, p=.005) (Table 11).

Prior Treatment

Children who received outpatient care (OR=4.32, p<.001), day treatment (OR=2.83 p<.001), crisis services (OR=1.91, p=.005) or inpatient psychiatric care (OR=3.67, p<.001) prior to their spell all had significantly higher odds of being hospitalized during their first three months in foster care (Table 10) . However, in the regression that controlled for the timing and type of placement change (Table 11), prior crisis service use was no longer a significant predictor of hospitalization (OR=.1.52, p=.140).

Demographics

While race was not a significant predictor of hospitalization, older children were significantly more likely to be hospitalized than younger children (OR=1.23, p<.001) (Table 10). The year in which the child entered foster care was not significant.

Psychiatric Hospitalization as a Predictor of Placement Change.

Overall, children who were hospitalized during their foster care spells had higher odds of subsequent placement changes than children who were not hospitalized (OR=1.51, p<.001) (Table 12). However, as shown in Tables 13-15, hospitalization did not increase the odds of all types of placement changes. Children who were hospitalized during their foster care spell had higher odds of having subsequent more restrictive (OR=2.51, p<.001) and lateral (OR=1.94, p<.001) placement changes than children who were not hospitalized. However, they were significantly less likely to have subsequent less restrictive placement changes (OR=0.52, p=.016).

VII. Discussion

Children who use crisis services and psychiatric hospitalization during their first three months in foster care are a unique group. They tend to enter foster care at older ages and are more likely than other youth to have received mental health treatment prior to their foster care spell. This finding suggests that youth who end up using emergency mental health care during their spell are more likely to enter foster care with pre-existing mental health problems.

These problems may be exacerbated by placement instability. The results from this study support my hypothesis that placement change predicts use of emergency mental health services. Children who changed placements during their foster care spell had greater odds of use of crisis services and psychiatric hospitalization than children who did not change placements. The results also support my hypothesis that use of emergency mental health services predicts placement change. Children who used crisis services or who were hospitalized during their first three months of foster care were more likley to change placements than children who did not use emergency mental health services. Finally, the findings support the hypothesis that the relationship between placement instability and use of emergency mental health services is

influenced by the type of placement change. While there was a bidirectional relationship between placement change and emergency mental health service utilization, the nature of the relationship depended on the type of emergency service and the type of placement change. The variations in this relationship and the possible causes of the findings are explored below.

More restrictive changes were associated with subsequent use of crisis services, but use of crisis services was associated with subsequent lateral and less restrictive changes. Children and youth who are placed in more restrictive settings may have higher odds of subsequent crisis service use because they have more acute mental health problems than children who are not placed in restrictive settings. Children are often placed in more restrictive settings so that they can receive intensive mental health services. Additionally, these types of changes are traumatic. Afterall, when a child moves to a more restrictive setting he or she is either leaving their biological family behind, or moving from a family-based setting to a group-based setting.

The finding that children and youth who use crisis services have higher odds of subsequent lateral and less restrictive changes is counterintuitive. If a child's mental health problems are acute and severe enough to require crisis intervention, then one might expect that he or she would be viewed as too difficult for similar or less restrictive settings. There are two possible explanations for this finding. It is possible that children who used crisis services were already living in the most restrictive settings and the case managers only option is to move these children to similar or less restrictive settings. Or, these children might have had higher odds of lateral and less restrictive changes because these types of changes are much more common than more restrictive changes. Only 7% of the entire sample had a more restrictive change. Current mental health policy advises practitioners that children must be kept in the "least restrictive environment," therefore, crisis service and child welfare providers may be reluctant to move children to more restrictive settings even if the children's mental health problems are severe enough to warrant emergency intervention. Future research should investigate how new foster care placements are chosen in order to shed light on why some foster children are moved to less restrictive settings following psychiatric crises.

More restrictive and lateral placement changes were associated with subsequent use of psychiatric hospitalization, but the reverse was also true- children who were hospitalized were more likely to have subsequent more restrictive and lateral placement changes. This bi-directional relationship may exist because more restrictive placement changes are used as a response to mental health problems. For example, it is possible that children are moved into restrictive placements because they have mental health problems, and when these placements do not effectively address their psychiatric needs a severe crisis occurs. Conversely, when a child has a mental health crisis that requires psychiatric hospitalization, this may signal the child's case manager that his or her prior placement was unsuitable. The case manager may realize that the child’s mental health problems are severe and decide to move the child to a more restrictive setting where he or she can receive more intensive mental health treatment.

Implications for Practice

Given that children who move to more restrictive settings are more likely to enter foster care with mental health problems, children should be screened for symptoms of mental health disorders immediately upon entry into the foster care system. Children who show symptoms of psychiatric distress should be provided with mental health services. In our sample, approximately 70% of the crisis users and 40% of the children who were hospitalized did not receive any prior outpatient care during their foster care spell. After these children entered foster

care, their first contact with the mental health system was with psychiatric emergency services. If children with mental health disorders are quickly enrolled in outpatient treatment, the necessity for emergency intervention may be avoided.

If a foster child does have a mental health emergency, foster care case managers should be aware that this child is at an elevated risk of having a placement change. Case managers should evaluate each situation on an individual basis to decide if a change is in the child's best interest.

More restrictive changes may be avoided through the use of interventions designed to promote placement stability. For example, the Fostering Individualized Assistance Program which provided wraparound services to 132 foster children who were at risk of developing emotional and behavioral problems had a marginally significant negative effect on placement change (Clark, Lee, Prange, & McDonald, 1996). Additionally, a study of the Foster Care Initiative, a pilot project in New York City that placed mental health care providers in two foster care agencies, found that the rate of placement change for children served in these agencies was much lower than the overall rate of placement change for foster children in New York City. The mental health care providers not only provided individual and group therapy to foster children and their caregivers, they also consulted daily with the agencies' case managers and educated the case managers about the impact of trauma on children's mental health (Colado & Levine, 2007).

Limitations

While the use of California Medicaid data allowed us to obtain a large and geographically diverse sample, and to control for use of both outpatient and inpatient treatment, it also created some limitations. First of all, because the Medicaid claims were used to identify children in foster care, all of the children in the sample received mental health services at some point between July 1 1998 and June 30 2001. Thus the sample may have included a higher proportion of children with mental health problems than the proportion in California's foster care system. Yet, if our sample had a higher than average proportion of children with mental health problems then my estimates of the relationship between placement change and subsequent emergency services use may be conservative. Foster children without mental health problems probably have a very low risk of using crisis services or inpatient psychiatric care, so the effect of placement change on the odds of future emergency service use may actually be higher.

Additionally, a study by Rubin and colleagues (2005) found that the Medicaid program is not always alerted when a child enters foster care, and that children who are identified as being in the foster care system through the use of Medicaid eligibility codes are more likely to have been in foster care longer than two months, have multiple placements, reside in a group home and use mental health services. Therefore, children who change placements and use mental health services may have been over-represented in our sample.

Furthermore, our sample was restricted to children whose foster care spell lasted for at least 90 days, and I only examined service use during the 90-day time frame. The relationship between placement change and emergency mental health treatment may differ depending on the amount of time a child has spent in foster care. For example, the children in our sample did not have enough time to become truly attached to their new caregivers. A child who has spent a year with the same foster family and grown attached to them, may be traumatized by any type of placement change, including a less restrictive one.

Finally, because I used administrative records and not case files, I did not have information on the reasons for the placement changes or the mental health crises. Without

knowing why these two outcomes occurred, it is impossible to directly determine if placement change causes mental health crises or vice versa.

Directions for Future Research

Research on foster care placement change and child mental health outcomes is still in its infancy. In order to understand the true causes and consequences of placement changes researchers need to include more details about the changes in their analyses. Not only might the cause of the change impact a child's mental health, the degree of change such as whether the child must switch schools and neighborhoods and leave siblings behind may also have an impact. A recent study of 159 youth who entered a residential school for foster children found that the number of previous schools a child had attended was positively correlated with the child's level of behavior problems (Sullivan, Jones, & Mathiesen, 2010).

Additionally, while our study only examined placement changes within a foster care spell, leaving a spell to return to one's biological parents may also impact children's mental health and use of emergency mental health care. Future researchers should include these types of changes in their analyses.

Future researchers should not only focus on the details surrounding placement changes, because the relationship between placement change and use of emergency mental health care is bi-directional. The nature of the emergency services that foster children receive may also influence whether or not they are likely to change placements. For example, foster children who receive home-based crisis intervention services may be less likely to subsequently change placements than foster children who are treated in crisis respite or hospital-based programs, because the home-based services may be better able to address conflicts between the children and their foster families.

Researchers should also consider whether receipt of outpatient care or placement stability services have protective effects. Not only might these services prevent the need for emergency mental health treatment, if they are provided after crisis services or hospitalization they might prevent more restrictive placement changes.

Foster children who use emergency mental health care are by definition involved in two service systems: the foster care system and the mental health system. However, these children may be involved in other service sectors such as school-based mental health services or the criminal justice system. It is also possible that placement change and use of emergency mental health care influences or is influenced by these children's involvement in these other sectors. Future researchers should investigate this possibility.

Finally, additional research is needed on organizational and county level factors that might influence placement change and receipt of mental health services. Many placement changes are due to policy issues (James et al., 2004) and mental health service systems differ between counties. Thus it is possible that the county a foster child lives in and the policies of the child welfare agency in charge of his or her case may have a significant effect on the types of foster care placements the child is placed in, and the types of mental health services the child receives.

Children in foster care account for a high proportion of Medicaid expenditures on children's mental health services and emergency mental health services are some of the most expensive forms of mental health care (Burns et al., 1999). Furthermore, lateral and more restrictive placement changes are disruptive, require time and resources on the part of the foster care system, and may be harmful to children's mental health. By further exploring the

relationship between placement change and use of emergency mental health services, future researchers and clinicians may come up with solutions to avoid these two negative outcomes and improve the lives of children and youth in foster care.

Figure 1: Types of Placement Changes

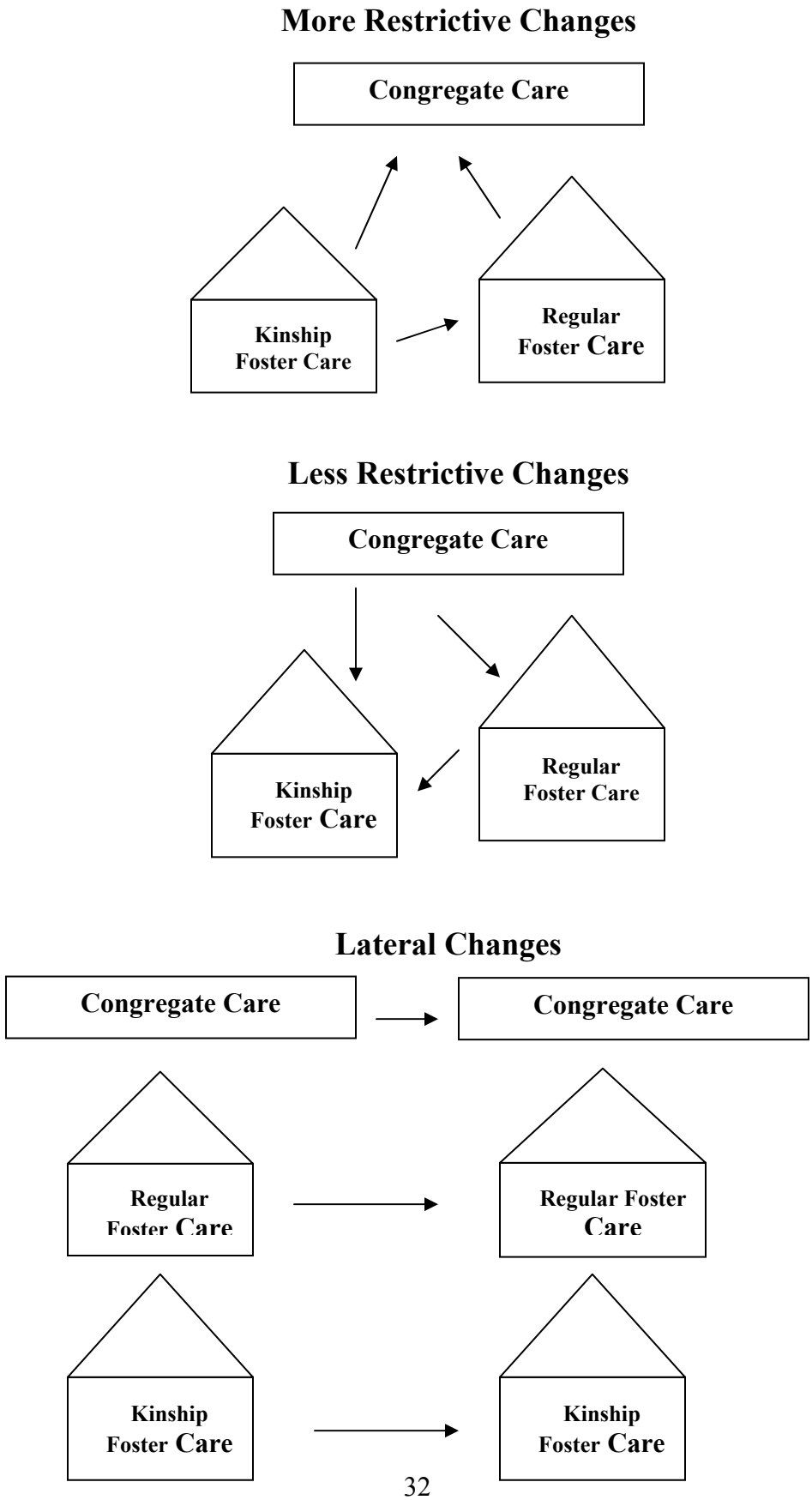

Table 1

Demographics for all foster children, foster children who used crisis services, and foster children who received inpatient mental health services.

Demographics	All Foster Children (N=37,693)	Crisis Users (N=1212)	Inpatient Mental Health Users (N=281)
Gender			
Female	19,371 (51%)	638 (52%)	154 (54%)
Male	18,322 (49%)	574 (47%)	130 (46%)
Ethnicity			
White	12,221 (32%)	468 (39%)	112 (40%)
Black	8862 (24%)	275 (23%)	73 (26%)
Asian	1060 (3%)	39(3%)	5 (2%)
Hispanic	14,714 (39%)	402(33%)	86 (31%)
Native American	501 (1%)	26(2%)	5 (2%)
Other	335 (1%)	2 (.2%)	0 (0%)
Age at Start of Spell			
0-5	18,192 (48%)	84(6%)	6 (2%)
6-11	11,464 (30%)	599(49%)	96 (34%)
12-18	8037 (21%)	529 (45%)	179 (64%)
Year			
1998	6624 (18%)	191 (16%)	48 (17%)
1999	12,835 (34%)	419 (35%)	81 (29%)
2000	12,188 (32%)	396 (33%)	100 (36%)
2001	6046 (16%)	206 (17%)	52 (19%)

Table 2

Mental health service utilization both before and during the foster care spell for all foster children, foster children who used crisis services, and foster children who received inpatient mental health services

Use of Mental Health Services	All Foster Children	Crisis Users	Inpatient Mental Health Users
Any mental health care before spell	1910 (5%)	288 (23%)	127 (45%)
Any mental health care during spell	7271(19%)	---	---
Before Spell			
At least one outpatient visit 90 days prior to spell	1720 (90%a)	249 (86%a)	114 (90%a)
At least one day treatment visit 90 days prior to spell	134 (7%a)	43 (15%a)	18 (14%a)
At least one crisis visit 90 days prior to spell	462 (24%a)	98 (34%a)	56 (44%a)
At least one inpatient stay 90 days prior to spell	283 (15%a)	88 (31%a)	54 (43%a)
During Spell			
At least one outpatient visit first 90 days of spell	6808 (94%b)	803(66%)	265 (94%)
At least one day treatment visit first 90 days of spell	520 (7%b)	256 (21%)	48 (17%)
At least one crisis first 90 days of spell	1212 (17%b)	------	175 (62%)
At least one inpatient stay first 90 days of spell	281 (4%b)	162(14%)	-----

A Percentage of children who received prior mental health care

B Percentage of children who received mental health treatment during their foster care spell

Table 3

Placement Change Characteristics for all foster children, foster children who used crisis services, and foster children who received inpatient mental health services.

Placement Change	All Foster Children	Crisis Users	Inpatient Mental Health Users
Any placement change	19,879 (53%)	1003 (83%)	223 (79%)
Types of placement changes			
More restrictive	2455 (7%)	164 (14%)	83(30%)
Lateral	9380 (25%)	470 (39%)	164 (58%)
Less restrictive	11,413 (30%)	642 (53%)	55(20%)
Average number placement changes	1.34*	1.56*	2.00*
Timing of crisis visit during foster care spell			
Crisis visit before any placement changes		808 (67%)	
Crisis visit after all placement changes		101 (8%)	
Crisis visit between placement changes		94 (8%)	
Timing of inpatient stay during foster care spell			
Inpatient stay before any placement changes			92 (33%)
Inpatient stay after all placement changes			62 (22%)
Inpatient stay between placement changes			69 (25%)

* average for children who changed at least once

Table 4

Logistic Regression Model of Placement Change at Any Time During the Foster Care Spell as a Predictor of Crisis Service Use

	Odds Ratio	Standard Error	Confidence Interval	P value
Placement Change (None)				
Placement Change	5.08	2.01	2.33-11.04	<.001
Prior Treatment (none)				
Outpatient	2.31	1.15	0.87-6.13	.093
Day Treatment	4.48	1.90	1.95-10.30	<.001
Crisis Visit	2.85	0.69	1.77-4.59	<.001
Inpatient Stay	2.43	0.55	1.56-3.79	<.001
Gender (female)				
Male	1.03	0.07	0.91-1.18	.638
Race (White)				
Asian	0.96	0.20	0.64-1.43	.831
Black	0.98	0.18	0.68-1.41	.904
Hispanic	0.86	0.19	0.56-1.33	.510
Other	1.27	0.41	0.68-2.38	.457
Age (12-18)				
0_5	0.08	0.01	0.06-0.11	<.001
6_11	0.89	0.19	0.58-1.35	.578
Year (1999)				
1998	0.91	0.09	0.74-1.10	.331
2000	0.95	0.13	0.72-1.24	.689
2001	1.02	0.22	0.67-1.54	.942

Table 5

Logistic Regression Model of More Restrictive, Lateral, and Less Restrictive Placement Changes as Predictors of Subsequent Crisis Service Use

	Odds Ratio	Standard Error	Confidence Interval	P value
Type of Placement change (None)				
More Restrictive	2.73	0.67	1.69-4.42	<.001
Lateral	1.20	0.32	0.72-2.02	.488
Less Restrictive	0.49	0.08	0.36-0.67	<.001
Prior Treatment (none)				
Outpatient	3.74	1.05	2.17-6.48	<.001
Day Treatment	2.04	0.64	1.10-3.78	.025
Crisis Visit	1.90	0.77	0.86-4.23	.113
Inpatient Stay	3.14	1.07	1.61-6.12	.001
Gender (female)				
Male	0.93	0.14	0.68-1.27	.630
Race (White)				
Asian	0.88	0.36	0.40-1.97	0.76
Black	0.85	0.12	0.65-1.11	.230
Hispanic	0.61	0.09	0.46-0.80	<.001
Other	0.87	0.24	0.51-1.49	.616
Age (12-18)				
0_5	0.08	0.02	0.06-0.13	<.001
6_11	0.59	0.07	0.48-0.73	<.001
Year (1999)				
1998	0.78	0.21	0.47-1.32	.355
2000	1.29	0.17	0.99-1.68	.059
2001	1.81	0.36	1.23-2.67	.003

Table 6

Logistic Regression Model of Crisis Service Use During the Foster Care Spell as a Predictor of Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Crisis visit during foster care (None)				
Crisis Visit Prior to Change	4.04	2.06	1.49-10.97	.006
Prior Treatment (none)				
Outpatient	0.90	0.11	0.70-1.15	.383
Day Treatment	0.78	0.18	0.50-1.23	.286
Crisis Visit	0.82	0.12	0.62-1.08	.158
Inpatient Stay	0.83	0.23	0.50-1.39	.483
Gender (female)				
Male	0.96	0.02	0.92-1.00	.078
Race (White)				
Asian	1.28	0.10	1.10-1.49	.002
Black	0.81	0.06	0.69-0.93	.005
Hispanic	0.97	0.09	0.81-1.16	.722
Other	0.79	0.08	0.64-0.96	.019
Age (12-18)				
0_5	1.18	0.20	0.84-1.65	.349
6_11	1.07	0.07	0.95-1.21	.267
Year (1999)				
1998	1.02	0.06	0.90-1.15	.788
2000	1.09	0.05	1.00-1.20	.050
2001	1.03	0.04	0.95-1.12	.458

Table 7

Logistic Regression Model of Crisis Service Use as a Predictor of a Subsequent *More Restrictive* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Crisis visit during foster care (None)				
Crisis Visit Prior to Change	1.06	0.15	0.81-1.40	.660
Prior Treatment (none)				
Outpatient	1.15	0.13	0.92-1.43	.218
Day Treatment	0.75	0.25	0.38-1.45	.391
Crisis Visit	1.93	0.35	1.36-2.74	<.001
Inpatient Stay	0.49	0.15	0.27-0.88	.018
Gender (female)				
Male	1.02	0.05	0.93-1.12	.617
Race (White)				
Asian	1.26	0.24	0.87-1.83	.223
Black	1.08	0.07	0.96-1.22	.206
Hispanic	1.26	0.10	1.08-1.47	.003
Other	0.91	0.21	0.58-1.42	.665
Age (12-18)				
0_5	0.48	0.04	0.40-0.57	<.001
6_11	0.60	0.04	0.52-0.69	<.001
Year (1999)				
1998	1.21	0.08	1.05-1.38	.008
2000	0.58	0.13	0.37-0.90	.014
2001	0.54	0.11	0.37-0.80	.002

Table 8

Logistic Regression Model of Crisis Service Use as a Predictor of a Subsequent *Lateral* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Crisis visit during foster care (None)				
Crisis Visit Prior to Change	1.47	0.07	1.34-1.61	<.001
Prior Treatment (none)				
Outpatient	1.09	0.12	0.87-1.36	0.469
Day Treatment	1.05	0.20	0.72-1.53	0.807
Crisis Visit	1.09	0.11	0.90-1.33	0.372
Inpatient Stay	1.12	0.18	0.82-1.53	0.480
Gender (female)				
Male	1.03	0.03	0.97-1.09	0.280
Race (White)				
Asian	0.93	0.11	0.74-1.18	.567
Black	0.84	0.08	0.71-1.00	.056
Hispanic	0.82	0.05	0.73-0.93	.002
Other	0.71	0.08	0.57-0.90	.004
Age (12-18)				
0_5	0.96	0.13	0.73-1.25	.749
6_11	0.84	0.03	0.78-0.91	<.001
Year (1999)				
1998	1.00	0.03	0.94-1.07	.926
2000	1.13	0.04	1.05-1.21	.001
2001	1.09	0.05	1.00-1.19	.055

Table 9

Logistic Regression Model of Crisis Service Use as a Predictor of a Subsequent *Less Restrictive* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Crisis visit during foster care (None)				
Crisis Visit Prior to Change	4.19	1.96	1.68-10.49	.002
Prior Treatment (none)				
Outpatient	0.74	0.12	0.54-1.00	.051
Day Treatment	0.67	0.16	0.42-1.07	.095
Crisis Visit	0.58	0.12	0.39-0.86	.008
Inpatient Stay	0.57	0.24	0.25-1.28	.174
Gender (female)				
Male	0.94	0.29	0.88-0.99	.028
Race (White)				
Asian	1.57	0.25	1.16-2.13	.004
Black	0.83	0.08	0.69-1.00	.055
Hispanic	1.13	0.15	0.86-1.48	.375
Other	0.83	0.12	0.63-1.10	.189
Age (12-18)				
0_5	1.70	0.24	1.29-2.25	<.001
6_11	1.58	0.10	1.39-1.79	<.001
Year (1999)				
1998	0.98	0.08	0.83-1.15	.767
2000	1.15	0.14	0.90-1.46	.257
2001	1.06	0.08	0.92-1.23	.420

Table 10

Logistic Regression Model of Placement Change at any time during the foster care spell as a Predictor of Psychiatric Hospitalization

	Odds Ratio	Standard Error	Confidence Interval	P value
Placement Change (None)				
Placement Change	3.87	0.42	3.13-4.78	<.001
Prior Treatment (none)				
Outpatient	4.32	0.47	3.50-5.34	<.001
Day Treatment	2.83	0.70	1.74-4.61	<.001
Crisis Visit	1.91	0.43	1.22-2.98	.005
Inpatient Stay	3.67	0.85	2.33-5.78	<.001
Gender (female)				
Male	1.09	0.15	0.83-1.44	.539
Race (White)				
Black	1.24	0.19	0.92-1.66	.155
Hispanic	0.93	0.17	0.64-1.34	.685
Other	0.74	0.25	0.38-1.43	.368
Age	1.23	0.03	1.18-1.28	<.001
Year (1999)				
1998	1.22	0.36	0.68-2.19	.499
2000	1.22	0.01	0.87-1.72	.253
2001	1.22	0.26	0.81-1.84	.341

Table 11
Logistic Regression Model of More Restrictive, Lateral, and Less Restrictive Placement Changes as Predictors of Subsequent Psychiatric Hospitalization

	Odds Ratio	Standard Error	Confidence Interval	P value
Type of Placement Change (None)				
More Restrictive	3.09	0.79	1.88-5.09	<.001
Lateral	2.22	0.27	1.74-2.83	<.001
Less Restrictive	0.58	0.11	0.40-0.85	.005
Prior Treatment (none)				
Outpatient	4.55	0.82	3.19-6.49	<.001
Day Treatment	2.88	0.90	1.57-5.30	.001
Crisis Visit	1.52	0.43	0.87-2.66	.140
Inpatient Stay	2.95	0.68	1.87-4.64	<.001
Gender (female)				
Male	0.94	0.18	0.65-1.36	.735
Race (White)				
Black	1.32	0.24	0.92-1.88	.129
Hispanic	1.02	0.17	0.74-1.41	.892
Other	0.97	0.38	0.45-2.08	.935
age	1.19	0.02	1.16-1.23	<.001
Year (1999)				
1998	1.14	0.48	0.50-2.59	.750
2000	1.43	0.32	0.92-2.23	.108
2001	1.32	0.40	0.74-2.36	.356

Table 12

Logistic Regression Model of Psychiatric Hospitalization as a Predictor of Subsequent Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Psychiatric hospitalization during foster care (None)				
Psychiatric Hospitalization prior to change	1.51	0.17	1.21-1.88	<.001
Prior Treatment (none)				
Outpatient	0.91	0.12	0.70-1.18	.466
Day Treatment	0.98	0.35	0.49-1.96	.952
Crisis Visit	1.42	0.31	0.92-2.19	.115
Inpatient Stay	0.86	0.21	0.54-1.39	.544
Gender (female)				
Male	0.96	0.02	0.93-1.00	.070
Race (White)				
Asian	1.28	0.10	1.09-1.49	.002
Black	0.80	0.08	0.69-0.94	.006
Hispanic	0.97	0.95	0.80-1.18	.725
Other	0.80	0.79	0.66-0.97	.026
Age (12-18)				
0_5	1.12	0.16	0.84-1.49	.456
6_11	1.07	0.07	0.94-1.22	.311
Year (1999)				
1998	1.02	0.06	0.90-1.15	.811
2000	1.09	0.05	0.99-1.20	.075
2001	1.03	0.04	0.95-1.12	.432

Table 13

Logistic Regression Model of Psychiatric Hospitalization as a Predictor of Subsequent *More Restrictive* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Psychiatric hospitalization during foster care (None)				
Psychiatric Hospitalization prior to change	2.51	0.41	1.83-3.45	<.001
Prior Treatment (none)				
Outpatient	1.16	0.11	0.97-1.39	.109
Day Treatment	0.69	0.24	0.35-1.38	.291
Crisis Visit	1.52	0.24	1.12-2.06	.007
Inpatient Stay	0.64	0.19	0.36-1.15	.137
Gender (female)				
Male	1.02	0.04	0.94-1.11	.585
Race (White)				
Asian	1.23	0.24	0.84-1.82	.290
Black	1.07	0.07	0.94-1.23	.293
Hispanic	1.25	0.10	1.08-1.45	.003
Other	0.93	0.20	0.61-1.43	.750
Age (12-18)				
0_5	0.49	0.04	0.41-0.58	<.001
6_11	0.61	0.04	0.53-0.70	<.001
Year (1999)				
1998	1.18	0.10	1.00-1.39	.047
2000	0.58	0.12	0.38-0.88	.010
2001	0.56	0.11	0.38-0.82	.003

Table 14

Logistic Regression Model of Psychiatric Hospitalization as a Predictor of Subsequent *Lateral* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
Psychiatric hospitalization during foster care (None)				
Psychiatric Hospitalization prior to change	1.94	0.24	1.52-2.48	<.001
Prior Treatment (none)				
Outpatient	1.08	0.12	0.87-1.34	.484
Day Treatment	1.04	0.23	0.68-1.60	.846
Crisis Visit	1.35	0.13	1.12-1.62	.002
Inpatient Stay	1.13	0.14	0.89-1.43	.321
Gender (female)				
Male	1.03	0.03	0.97-1.10	.275
Race (White)				
Asian	0.95	0.11	0.76-1.18	.619
Black	0.84	0.08	0.71-1.01	.063
Hispanic	0.82	0.05	0.72-0.93	.002
Other	0.72	0.08	0.58-0.91	.005
Age (12-18)				
0_5	0.94	0.12	0.72-1.21	.620
6_11	0.84	0.03	0.78-0.90	<.001
Year (1999)				
1998	1.01	0.03	0.95-1.08	.713
2000	1.13	0.04	1.05-1.21	.001
2001	1.10	0.05	1.02-1.19	.017

Table 15

Logistic Regression Model of Psychiatric Hospitalization as a Predictor of Subsequent *Less Restrictive* Placement Change

	Odds Ratio	Standard Error	Confidence Interval	P value
IP hospitalization during foster care (None)				
Inpatient Hospitalization	0.52	0.14	0.30-0.89	.016
Prior Treatment (none)				
Outpatient	0.74	0.14	0.52-1.06	.100
Day Treatment	1.05	0.49	0.42-2.64	.912
Crisis Visit	1.41	0.48	0.71-2.76	.324
Inpatient Stay	0.52	0.22	0.23-1.18	.118
Gender (female)				
Male	0.94	0.03	0.89-0.99	.026
Race (White)				
Asian	1.55	0.24	1.14-2.11	.005
Black	0.83	0.08	0.69-1.01	.059
Hispanic	1.12	0.16	0.85-1.48	.432
Other	0.86	0.12	0.64-1.14	.287
Age (12-18)				
0_5	1.58	0.15	1.31-1.89	<.001
6_11	1.56	0.10	1.37-1.78	<.001
Year (1999)				
1998	0.97	0.08	0.83-1.13	.701
2000	1.14	0.14	0.89-1.44	.294
2001	1.06	0.08	0.91-1.23	.488

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Appendix: Regressions with County Fixed Effects

Logistic Regression Model of Placement Change at Any Time During the Foster Care Spell as a Predictor of Crisis Service Use with County Fixed Effects

	Odds Ratio	Standard Error	Confidence Interval	P value
Placement Change (None)				
Placement Change	4.40	1.78	1.99-9.70	<.001
Prior Treatment (none)				
Outpatient	3.96	1.01	2.40-6.54	<.001
Day Treatment	3.45	1.35	1.61-7.42	.001
Crisis Visit	2.01	0.64	1.08-3.75	.027
Inpatient Stay	2.68	0.82	1.47-4.89	.001
Gender (female)				
Male	1.00	0.07	0.88-1.14	.982
Race (White)				
Asian	0.71	0.09	0.54-0.92	.009
Black	0.95	0.10	0.77-1.17	.631
Hispanic	0.79	0.08	0.64-0.96	.016
Other	0.90	0.23	0.54-1.49	.679
Age (12-18)				
0_5	0.03	0.01	0.02-0.46	<.001
6_11	0.63	0.08	0.49-0.81	<.001
Year (1999)				
1998	0.96	0.13	0.74-1.24	.748
2000	1.01	0.14	0.76-1.34	.947
2001	0.94	0.29	0.51-1.74	.850

* 16 counties excluded from the analysis. Odds ratios for each county not reported.

Logistic Regression Model of Crisis Service Use During the Foster Care Spell as a Predictor of Placement Change with County Fixed Effects

	Odds Ratio	Standard Error	Confidence Interval	P value
Crisis visit during foster care (None)				
Crisis Visit Prior to Change	2.75	1.19	1.18-6.42	.020
Prior Treatment (none)				
Outpatient	0.89	0.08	0.74-1.07	.205
Day Treatment	0.79	0.21	0.47-1.32	.368
Crisis Visit	0.83	0.14	0.59-1.16	.279
Inpatient Stay	0.85	0.24	0.49-1.47	.552
Gender (female)				
Male	0.96	0.02	0.92-1.00	.052
Race (White)				
Asian	1.15	0.10	0.97-1.37	.107
Black	0.91	0.03	0.86-0.97	.002
Hispanic	1.00	0.04	0.94-1.08	.893
Other	0.82	0.08	0.68-1.00	.045
Age (12-18)				
0_5	1.11	0.19	0.80-1.54	.541
6_11	1.03	0.06	0.92-1.17	.588
Year (1999)				
1998	1.01	0.06	0.90-1.14	.856
2000	1.10	0.05	1.01-1.19	.032
2001	1.03	0.05	0.80-1.54	.567

* 1 county excluded from the analysis. Odds ratios for each county not reported.

Logistic Regression Model of Placement Change at Any Time During the Foster Care Spell as a Predictor of Psychiatric Hospitalization with County Fixed Effects

	Odds Ratio	Standard Error	Confidence Interval	P value
Placement Change (None)				
Placement Change	4.09	0.42	3.34-5.00	<.001
Prior Treatment (none)				
Outpatient	4.55	0.51	3.65-5.66	<.001
Day Treatment	2.84	0.82	1.61-4.99	<.001
Crisis Visit	2.39	0.61	1.45-3.94	.001
Inpatient Stay	3.24	0.78	2.03-5.18	<.001
Gender (female)				
Male	1.07	0.15	0.82-1.41	.617
Race (White)				
Black	1.03	0.16	0.76-1.40	.850
Hispanic	0.85	0.14	0.61-1.17	.320
Other	0.76	0.28	0.37-1.55	.446
Age	1.22	0.03	1.17-1.28	<.001
Year (1999)				
1998	1.26	0.38	0.70-2.29	.439
2000	1.19	0.21	0.85-1.68	.314
2001	1.30	0.28	0.84-1.99	.237

* 27 counties excluded from the analysis. Odds ratios for each county not reported.

Logistic Regression Model of Psychiatric Hospitalization During the Foster Care Spell as a Predictor of Placement Change with County Fixed Effects

	Odds Ratio	Standard Error	Confidence Interval	P value
Psychiatric hospitalization during foster care (None)				
Psychiatric Hospitalization prior to change	1.60	0.21	1.24-2.06	<.001
Prior Treatment (none)				
Outpatient	0.91	0.83	0.78-1.09	.300
Day Treatment	0.92	0.30	0.48-1.75	.790
Crisis Visit	1.21	0.18	0.91-1.62	.188
Inpatient Stay	0.89	0.24	0.52-1.51	.658
Gender (female)				
Male	0.96	0.02	0.92-1.00	.044
Race (White)				
Asian	1.14	0.10	0.96-1.36	.122
Black	0.91	0.03	0.86-0.96	.001
Hispanic	1.00	0.03	0.94-1.07	.954
Other	0.84	0.08	0.96-1.36	.057
Age (12-18)				
0_5	1.06	0.16	0.69-1.01	.694
6_11	1.03	0.06	0.79-1.42	.661
Year (1999)				
1998	1.01	0.06	0.90-1.14	.839
2000	1.10	0.05	1.01-1.19	.037
2001	1.03	0.05	0.94-1.12	.505

* 1 county excluded from the analysis. Odds ratios for each county not reported.