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Crossover Youth: Person-Centered Approaches to Understanding Youth Involved in the Child Welfare and Juvenile Justice Systems

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Crossover Youth: Person-Centered Approaches to Understanding Youth Involved in the Child
Welfare and Juvenile Justice Systems

Kellie G. Randall, Ph.D.

University of Connecticut, 2015

Crossover youth (COY) is a broad term that describes those who are served, at any point, by both the child welfare and juvenile justice systems (Herz & Ryan, 2008). In 2012, The Connecticut Department of Children and Families (DCF; the state child welfare agency) and the Court Support Services Divisions (CSSD; the state agency that handles juvenile court matters) entered into a data sharing agreement to better understand the COY population in the state. The current study uses this DCF-CSSD dataset to address two aims: (1) understand how COY differ from youth who are involved only in the child welfare system, and (2) describe the variance that exists within the COY with the goal of identifying distinct profiles of youth who are involved with both systems.

Using the sample of all youth born in 1996 who had DCF involvement (N= 7,268), latent class growth analysis was used to establish trajectories of maltreatment based on the number of substantiated maltreatment allegations experienced by each individual over the first 16 years of life. The analysis found five distinct trajectories of maltreatment. Consistent with previous variable-centered studies, a trajectory class with child welfare involvement beginning in late child hood or early adolescence was more likely to crossover than most others. However, the analyses also detected a small subgroup that had persistent child welfare contact over the 16-year period and that was most likely to crossover.

A second set of analyses was conducted only on the youth who did crossover (n= 1312). Previous research has largely treated COY as a single group ignoring the heterogeneity that is likely to exist in the population. To extend the understanding of COY the current study used latent class analysis to identify subgroups within the COY sample. Analyses supported a four-class solution; classes differed from each other on the extent of involvement in both the child welfare and the juvenile justice system. Taken together, these analyses provide a greater understanding of COY and how individual patterns of involvement contribute to youth experiences.

Kellie G. Randall – University of Connecticut, 2015

Crossover Youth: Person-Centered Approaches to Understanding Youth Involved in the Child
Welfare and Juvenile Justice Systems

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B.A., Williams College, 2007

M.A., University of Connecticut, 2012

A Dissertation

Submitted in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy
at the
University of Connecticut

2015

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APPROVAL PAGE

Doctor of Philosophy Dissertation

Crossover Youth: Person-Centered Approaches to Understanding Youth Involved in the Child
Welfare and Juvenile Justice Systems

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CHAPTER ONE: INTRODUCTION

Child protective service agencies investigate approximately 2 million reports of child abuse and neglect each year (U.S. Department of Health & Human Services, 2015). In 2013, these investigations resulted in 679,000 youth found to be victims of substantiated maltreatment. Meanwhile, juvenile courts process 1.4 million delinquency cases annually (Sickmund & Puzzanchera, 2014). The child welfare and juvenile justice systems assume fundamentally different stances toward youth: one aims to protect child victims whereas the other aims to manage youth who commit crimes. Policymakers, frontline staff, and researchers are well aware that there is overlap in these two systems, i.e., that a subset of youth are involved in both child welfare and juvenile justice. However, the exact number of youth served by both systems, their unique characteristics, and the best practices for addressing their needs are largely unknown at the state and national levels.

Crossover youth (COY) is a broad term that describes those who are served, at any point, by both the child welfare and juvenile justice systems (Herz & Ryan, 2008). COY can start in either system; involvement in the two systems can be concurrent or occur at different points in time. Although practitioners and policymakers wish to better understand the COY population, data are limited, and there is scant research on the specific characteristics, points of entry, points of crossover, and ways in which the experiences and developmental histories of COY differ from youth with single-system involvement. This absence of information comes about because, in practice, agencies that serve these youth tend not to coordinate the information that they collect on the youth served by their respective agencies. The lack of routine cross-system data sharing has made it difficult to study the unique developmental and behavioral characteristics of COY at a system-wide level.

In 2012, The Connecticut Department of Children and Families (DCF; the state child welfare agency) and the Court Support Services Divisions (CSSD; the state agency responsible for juvenile court matters) of the Connecticut Judicial Branch articulated a commitment to better understand the state's COY population. By means of a data sharing agreement, the two agencies hoped to gain at minimum a descriptive understanding of the number and characteristics of COY. Each agency provided information on a cohort of youth, resulting in a matched data set with records on COY and comparison youth with single system involvement.

The current study uses this DCF-CSSD dataset to increase the understanding of COY in Connecticut. Its aims are to: (1) understand how COY differ from youth who are involved only in the child welfare system (Study 1), and (2) describe the variance that exists within the COY with the goal of identifying distinct profiles of youth who are involved with both systems (Study 2). Studies 1 and 2 incorporate person-centered methods, which focus on identifying subgroups and understanding their unique experiences, rather than attempting to capture the average experience of all youth. Due to the difficulties of data sharing, few studies have been able to precisely describe the COY population. This study is the first to follow a birth cohort of youth across the two systems at a statewide level. Further, this is the first study to identify subgroups within the COY population to model the variety of experiences within this high-risk group.

Organization of the Dissertation

In the next chapter, I review the relevant crossover youth literature to provide context for the current study. The review begins with an abbreviated overview of the theories that serve to explain why maltreatment might lead to delinquency and an introduction to person-centered approaches. This is followed by a review of factors that influence the relationship between

maltreatment and delinquency. Next, the two aims of the current study are elaborated along with the research questions.

Chapter Three presents an overview of the data set and the methods of Study 1. Chapter Four presents the results of Study 1. Chapter Five presents the methods for Study 2. Chapter Six presents the results of Study 2. Chapter Seven integrates the findings from both studies and puts the results in context with the broader literature reviewed in Chapter Two. Implications for policy, practice, and future research are then suggested.

CHAPTER TWO: REVIEW OF RELEVANT LITERATURE

This chapter begins with a brief overview of the theoretical perspectives that link maltreatment and delinquency. The theoretical concepts of equifinality and multifinality are presented to provide context for the development of the current study's focus on understanding how COY are different both from single system-involved youth and also how there are differences within the COY sample. This is followed by an overview of person-centered methods. Previous findings are organized around the factors that have been found to influence the relationship between maltreatment and delinquency: timing of maltreatment, type of maltreatment, experiences in the child welfare system, and demographic factors.

Theoretical Perspectives

One of the primary theoretical views linking maltreatment and delinquency is social control theory (Gottredson & Hirschi, 1990), a perspective rooted in criminology. Social control theory seeks to understand why individuals choose or choose not to follow society's rules. From this view, typical individuals develop bonds to people and structures in society; maintaining these relationships requires adherence to social norms and avoidance of deviant behavior. When an individual values social relationships, they view themselves as having a stake in their wider

community and will voluntarily avoid deviant or antisocial behavior. When these bonds are weak or nonexistent, however, there is lower motivation to abide by society's rules. For typically developing youth, a primary bond begins through their relationship with parents. If this parent-child bond is more tenuous (e.g., if they are compromised by a parental relationship marked with abuse and neglect) individuals are not as strongly incentivized to adhere to social norms and thereby avoid delinquency.

Social control theory draws heavily from attachment theory, which focuses on a child's early experiences with a caregiver and their influence on the child's social development (Ainsworth, 1979). Youth who lack consistent and sensitive care are likely to experience distrust with others and struggle to form healthy and secure relationships. In one view, insecurity in the parent-adolescent relationships creates feelings of anger and hostility in the adolescent toward the parent. These negative feelings reduce the ability of a parent to direct or control an adolescent's behavior, thus the adolescent is more likely to engage in externalizing or delinquent behaviors (Allen, Moore, & Kuperminc, 1997). Alternatively, Allen and Land (1999) propose that externalizing behaviors might serve as a type of "primitive communication," a way to engage with and intensify interactions with attachment figures.

Taken together, attachment and social control theories provide three reasons for why parental rejection and child maltreatment may contribute to delinquency. First, a youth's capacity to follow social norms is diminished largely because the parent-child attachment is compromised. A second (related) reason is that disrupted parent-child relationships diminish parental capacity to guide and control their child's behavior. Finally, externalizing or acting out behavior might be used as a way to get attention from a parent that the child views as unengaged.

A deterministic perspective would suggest that a high proportion of youth who experience maltreatment go on to juvenile justice involvement. A probabilistic view of development, however, emphasizes that no single factor (e.g., child welfare involvement) directly leads to an adverse outcomes (Cicchetti & Toth, 1995). Rather, a youth's developmental trajectory following maltreatment is likely a combination of many factors including the timing and type of maltreatment, individual characteristics, family strengths and vulnerabilities, and other environmental barriers and supports available in the environment. A probabilistic perspective guides the current study in its attempt to both distinguish youth who do and do not crossover and to characterize those who do.

The probabilistic perspective is further articulated in the concepts of multifinality and equifinality (Cicchetti, 1996). Multifinality refers to the idea that any single attribute can produce a variety of outcomes. Youth can experience similar kinds of maltreatment and not all will end up with the same negative outcomes. In relation to the current study, multifinality guides the between groups questions that attempt to understand the circumstances under which a similar experience of maltreatment leads to delinquency for some youth but not for others.

Similarly, while no single factor is deterministic of an outcome, any group experiencing an outcome came to that point from a variety of pathways and experiences. Equifinality refers to the idea that there are multiple causes of or pathways to any particular negative outcome. In relation to the current study, equifinality largely guides the within group questions. Not all youth who experience involvement in both the child welfare and juvenile justice systems had the same experience. For example, are those that experience more severe and prolonged maltreatment more likely to commit more serious offenses and re-offend? Attempts to better understand the heterogeneity that is bound to exist in the population of COY is based on the recognition that

there are different pathways that lead to initially crossing over and a range of outcomes can be experienced after that initial point.

Whereas this study focuses on juvenile justice involvement, probabilistic views would suggest that crossing over is not the only negative outcome that might emerge from childhood maltreatment. There is a great deal of research that links childhood maltreatment to negative internalizing behaviors and outcomes (Kaufman, 1991; Lansford, et al., 2002). An elaborate discussion of the processes underlying maltreatment and internalizing behaviors is beyond the scope of this brief review, however, studies that examine both internalizing and externalizing outcomes find (sometimes contrary to their hypotheses) older maltreated children to be at higher risk for externalizing outcomes than those abused or neglected at earlier ages (Kaplow & Widom, 2007; Keiley, Howe, Dodge, Bates, Pettit, 2001).

Person-centered Framework

Person-centered approaches, while not a theory, provide a framework for exploring the experiences of COY. All of the research to day on COY has been variable-centered (exception is Stewart, Livingston, & Dennison, 2008). Definitions of these terms are important to both frame the discussion of past research that follows and introduce the contributions of the current study. Variable-centered approaches aim to relate variables to one another to determine relationships between predictors and outcomes. The assumption of a variable-centered approach is that the sample is drawn from a single population; therefore, on average, individuals experience factors similarly. Group differences can be examined, but only for observable groups. For example, variable-centered approaches can allow for detecting differences between males and females.

However, oftentimes there is an interest in subgroups that are not directly observable but are instead latent, they exist but have not yet been developed or articulated in such a way that

they can be used to make comparisons. Person-centered approaches have the underlying assumption that there is not one single population distribution within which individuals vary, but there are instead subgroups within which individuals are more similar to each other than they are to those in other subgroups (Jung & Wickrama, 2008). Person-centered analysis techniques are not focused on predicting outcomes but instead look at how variables cluster together in different ways for subgroups. This study is concerned with variations in individual patterns; therefore, a main focus on identifying subgroups that vary on their level of involvement in the child welfare and/or juvenile justice system.

As stated previously, nearly all of the research below describe COY from a variable-centered perspective. Rather than looking at how certain risk factors might cluster together to shape experience, the aim of the studies is often to isolate a particular risk factor and quantify its effect. Variable-centered approaches are necessary and useful. Person-centered approaches are designed to answer different types of questions, often questions that are only raised once variable-centered studies describe the current knowledge on a topic. The studies below provide the foundation for the current study; a solid understanding of overall relationships between risk factors and outcomes provides a starting point from which to explore variations in individual experiences.

Factors that Influence the Maltreatment and Delinquency Link

Before beginning a closer review of previous findings on factors that related maltreatment and delinquency, it is important to acknowledge the wide range of methods and types of data that have been used to answer this question. The link between maltreatment and delinquency is established through both administrative data (Bright & Jonson-Reid, 2008; Ryan & Testa, 2005; Widom, 1989) and large-scale longitudinal surveys that follow at-risk youth

(Mersky & Reynolds, 2007; Smith & Thornberry, 1995; Thornberry, Henry, Ireland, & Smith, 2010). Administrative data provide information on specific types of maltreatment and delinquency, namely, cases that have been noticed by the system. Studies using administrative data benefit from the ability to draw conclusions about the larger system (e.g., can speak to rates at a county or district level). Studies that use general at-risk samples have the advantage of a comparison group of non-maltreated youth and the ability to study self-reported delinquency or behaviors that do not show up in official records. The current study uses administrative data; maltreatment is measured by allegations substantiated by child welfare services and juvenile justice involvement is measured by the formal filing of charges in juvenile court.

Timing

The most studied aspect of the maltreatment to delinquency link is the timing of child welfare involvement (early childhood vs. late childhood vs. adolescence). Although much of the broader research into the impact of child maltreatment has focused on the experiences of younger children, it has been argued that adolescent maltreatment is often understudied and can be just as harmful (Smith, Ireland, & Thornberry, 2005). While children under 12 make up the largest group of maltreated youth, approximately 23% of maltreated children are between 12-17 years old (U.S. DHHS), making the role of maltreatment specifically during the adolescent period an important one to explore.

Two theoretical models explain the relative impact of early versus late maltreatment and its impact on delinquency. The developmental psychopathology model takes the view that development takes place in a series of stages; when there are disruptions at one stage, the later stages are inevitably impacted (Cicchetti, 1989). From this view, earlier maltreatment experiences result in a more severe impact. Developmental psychopathology suggests that youth

experiencing early maltreatment are at higher risk for crossing over because of cumulative and compounding effects.

Alternatively, the life course perspective emphasizes the timing of events as exerting influence over the course of an individual's development (Elder, 1998). When applied to criminal behavior, the theory posits that events such as maltreatment have differential impact based on the individual's stage of development when the event occurs and has a probabilistic impact going forward (Sampson & Laub, 2005). From this view, chronological age is not as important as the specific developmental tasks and transitions that a youth is facing when the maltreatment occurs. For example, maltreatment that occurs at critical times such as school transitions or the onset of puberty may have a more significant impact than maltreatment outside these transitions. If these critical times are associated with heightened levels of stress, maltreatment that co-occurs with them might be experienced in a very different way than maltreatment that occurs at time of more typical levels of stress. The life course perspective also highlights temporal proximity; adolescent maltreatment is more proximal to adolescent delinquency than is childhood maltreatment, which has an attenuated impact because it is distal in time.

Whereas developmental psychopathology and life course perspectives focus on different reasons for why abuse may contribute to delinquency, they are not mutually exclusive. That is, each theory is alternatively useful in explaining how specific sets of circumstances might predict different outcomes. Further, among studies that distinguish early versus later abuse, delinquency and maltreatment are linked in both childhood and adolescence (Mersky et al., 2012), and there is often a stronger relationship with adolescent maltreatment. The evidence of this specific link between adolescent maltreatment and delinquency is presented below.

Much of the research on the role of timing is based on data from the Rochester Youth Development Study (RYDS), a multi-wave panel study that followed an urban, at-risk sample of approximately 1,000 7th and 8th graders into adulthood (Smith & Thornberry, 1995). Males and youth from high crime areas were purposely overrepresented in the sample, as they are known to be at risk for serious offending. Youth and their caregivers were interviewed at six-month intervals over four and a half years, with later follow ups into adulthood at longer intervals. An early finding was that increases in delinquent behavior were found only for youth who experienced documented maltreatment in adolescence, whether it was adolescent-limited or persistent from childhood through adolescence. Youth who experienced childhood-limited maltreatment (documented maltreatment occurring before the age of 12) were not significantly different from their non-maltreated peers in terms of self-reported and official delinquency (Thornberry, Ireland, & Smith, 2001).

This pattern of poorer outcomes among adolescent maltreatment victims demonstrating poorer outcomes than childhood-limited victims held when adult criminality was examined among former RYDS youth (Ireland, Smith, & Thornberry, 2002). The most recent study followed the RYDS cohort the further into adulthood and evaluated them on a variety of measures of adjustment and found a unique role for adolescent maltreatment (Thornberry et al., 2010). While childhood-limited maltreatment was associated with substance use and depression in adulthood, only adolescent maltreatment was significantly related with criminality in adulthood.

The RYDS findings are of particular significance because the sample was prospectively followed into adulthood and included both maltreated and non-maltreated youth. Other studies of maltreatment and delinquency have used administrative records. This method allows for a more

complete view of all youth with child welfare involvement in a given time frame. Studies taking this approach have also noted that later maltreatment is often more tied to delinquency than early maltreatment.

Ryan and Testa (2005) employed logistic regression to examine data on all youth born in Cook County, Illinois in 1983 and 1984 who were victims of a substantiated maltreatment allegation (N=18,676). Age at maltreatment was a significant predictor of juvenile justice involvement; for every additional year older a youth was at time of first maltreatment, the odds of delinquency increased by 1.09 and 1.06 for males and females, respectively. Unlike Ryan and Testa, who used the filing of delinquency charges as an outcome, Jonson-Reid and Barth (2000) focused on distinguishing which youth experienced incarceration. These authors used data from 10 counties in California (N=159,549) children who experienced maltreatment after age 6 to identify which youth went on to become the most serious offenders. Youth with a first maltreatment report investigation after the age of 14 were more likely to be incarcerated than those whose first report was before 14.

Age at maltreatment is consistently associated with delinquency outcomes, but when studies use only age at the first report information on the frequency and chronicity of child welfare involvement is lost. For example, in the Ryan and Testa study above, each additional year was associated with a specific increase in likelihood of crossing over; this is a variable-centered approach as it aims to identify the average effect of age across the sample. Stewart, Livingston, and Dennison (2008) took a person-centered approach and used data on a birth cohort of youth in Queensland, Australia (N=5,849) to go beyond the bifurcation of childhood vs. adolescent distinctions and instead established specific trajectories of maltreatment to better understand the role of timing.

Taking this approach, Stewart et al. observed six distinctive trajectories and then examined how they related to delinquency. They found that those that either began in, or extended into, adolescence were more likely to result in juvenile court involvement. While the approach to analysis was interesting, there were flaws in the analytic methods that limit the validity of the findings. The authors assume an inappropriate population distribution in their model, do not report any model fit statistics, and do not statistically test for differences among the trajectories in terms of likelihood of crossing over. Despite these flaws, Stewart et al. illustrated how researchers can begin to look at timing issues differently. The finding that turning points often aligned with school transitions, and that those sources of stress might play a role in the relationship between maltreatment and delinquency, brings needed nuance to the conversation around timing of maltreatment.

Maltreatment Experience

Studies have not consistently found an impact on the type of maltreatment a youth experiences and their likelihood of crossing over. In one of the first efforts to carefully study this population, Widom (1998) called for more rigorous designs. She then herself followed a sample of all youth who were victims of substantiated abuse and neglect in 1967-1971 (N= 908) in a Midwest jurisdiction to see which went on to have delinquency and adult criminal charges. She found that victims of abuse and victims of neglect were both more likely to commit any offense and in particular violent offenses. This challenged the then-dominant idea of a “cycle of violence,” where victims of abuse were more likely to commit violent acts because of the violence that had been done to them. Instead the results suggested that maltreatment of any kind led to increases in all types of offending; there was no unique connection between experiencing

abuse (as opposed to neglect) and an increased likelihood of committing violent offense. This began to shift the focus from the effect of abuse to the effect of maltreatment more broadly.

Although type of maltreatment might not distinguish between those who crossover and those who do not, it might explain variations within the crossover population. Entry into the juvenile justice systems is an important indicator, but it is only a single indicator; youth that have crossed over vary on a variety of other factors such as age at offense, type of offense, severity of offense, and recidivism. Few studies have looked within crossover youth to see if they vary on other measures of juvenile justice involvement. When they have, the findings have shown poorer outcomes for victims of neglect compared to abuse.

In their study of incarcerated youth, Jonson-Reid and Barth found that being a victim of neglect, but not of physical or sexual abuse, was predictive of incarceration. Similarly, Ryan, Williams, and Courtney recently found that in a sample of moderate and high risk juvenile offenders (N= 19,833) in Washington state that a current and ongoing case of adolescent neglect was associated with an increased risk of re-offending (2013). Youth with a current neglect case were 1.17 times more likely to recidivate within 18 months than youth with no history of neglect. The authors speculate that the type of neglect that takes place in adolescence is highly tied to lack of parental monitoring; this in turn is associated with increased recidivism rates. This study aims to explore the variance within the crossover youth population to better understand the different types of experiences that characterize subgroups.

Experiences in Child Welfare System

Involvement in the child welfare system is a risk factor as it represents allegations of maltreatment, yet it is also a point for intervention. While there is no clear relationship between the type of maltreatment allegations and delinquency (Grogan-Kaylor et al, 2008; Widom, 1989),

the services offered by the child welfare agency potentially have a moderating role on the maltreatment to delinquency link. However, the services and experiences while in contact with the child welfare system are not independent of the maltreatment experience: more intensive services are likely associated with more dire family situations and serious substantiated allegations. Therefore, services provided are both indicators of the severity of a situation and intervention attempts with their own impact.

Jonson-Reid and Barth (2000) explored how the receipt of child welfare services (in-home or out-of-home) related to juvenile incarceration rates for youth compared to youth who had been investigated for maltreatment but had no further contact. They found no significant results overall, but they did find trends when examined by subgroups. African American youth who received in-home services had lower rates of incarceration in adolescence than those whose cases were closed with no contact following initial investigation. This finding is noteworthy as it suggests child welfare in-home services might actually serve a protective role. Out-of-home placement, however, were not associated with any such positive impact. Females were more likely to experience incarceration if they experienced an out-of-home placement, but the same did not hold true for males.

Ryan and Testa (2005) further explored the role of out-of-home placements on delinquency with a much broader measure: the filing of any type of delinquency petition. Using data from child welfare and juvenile justice records on a birth cohort of youth in Illinois, they found that one or more out-of-home placements nearly doubled the risk of later delinquency, and stability of out-of-home placements also had an impact. Males who had an out-of-home episode marked with multiple placements were more likely to be the subject of a delinquency petition. The same role of placement instability was not found for females. Further, Ryan, Marshall, Herz,

and Hernandez (2008) found that youth placed in group-home settings were two and a half times more likely to be arrested than youth who had been placed in family foster care settings.

Demographic Factors

The findings reviewed above on the impact of child welfare services suggest that there are demographic differences in how the maltreatment to delinquency link is experienced. Race and ethnicity and gender might have been shown to influence the experiences youth have in moving between child welfare and juvenile justices systems.

Race and ethnicity. African American youth are not only disproportionately represented in child welfare and juvenile justice, they are also more likely to cross over between systems (Herz & Ryan, 2008; Ryan, Herz, Hernandez, & Marshall, 2007). In Jonson-Reid and Barth's study of maltreated youth who later became serious juvenile offenders, African Americans were most likely to be incarcerated followed by Hispanic youth. Ryan and Testa (2005) found that being African American increased the odds of crossing over for both males and females (by 2.17 and 1.97, respectively) and being Hispanic increased the odds of crossing over by 1.51 for males. This finding suggests that there are differences in how risk factors are experienced by gender.

Gender. Males are also overrepresented in the juvenile justice system, but there is some evidence that females are especially likely to enter the juvenile justice system with maltreatment histories (Ryan et al., 2007). Additionally, there is evidence that males and females actually experience differences in the factors that influence crossing over. In a group of 11 to 15 year olds reported and investigated as maltreated, the relationship with self-reported delinquency was associated with depression and harsh parental discipline for females, whereas for males, level of delinquency varied by substance abuse but not the other two factors (Postlethwait, Barth, & Guo, 2010). Bright and Jonson-Reid (2008) examined gender differences and found that while

maltreatment predicted delinquency for both genders, poverty had an additive effect for boys but not girls.

Summary of Previous Research

Taken together, the prior studies provide an overview of factors that are likely relevant to COY and are therefore considered in the design of the current study. The timing of maltreatment is of central focus; maltreatment that begins in or extends into adolescence is expected to have a greater likelihood of resulting in youth crossing over. Out-of-home placements are both an indicator of the severity of problems within a family as well as a potentially disruptive experience for youth; as such it is expected that experiencing such a placement will increase the likelihood of crossing over. There have been inconsistent findings on the type of maltreatment experience. This might be due to the largely variable-centered nature of previous research; it might be the case that there is not a specific effect of each type of maltreatment that can be isolated but rather the type of maltreatment interacts with other factors to contribute to differential experiences. Race and ethnicity have a documented role. While African American youth are overrepresented in both systems, there is evidence that race interacts with gender and minority males and minority females might have differential experiences. Finally, while males are more likely to be represented in the juvenile justice system, prior research suggests that males and females experience different pathways into delinquency. The current study explores these factors in relation to both the likelihood of crossing over and in severity of involvement with both the child welfare and juvenile justice systems.

The Current Study

As stated earlier, this inquiry includes two studies; they are presented separately here. The aim of Study 1 was to compare COY with comparison youth (i.e., child welfare involvement

with no subsequent juvenile justice contact) with the broader goal of identifying factors that distinguish COY from non-COY. Although there is limited research on which factors distinguish COY from non-COY, few use administrative data on a birth cohort of youth to study such relationships on a system-wide level. This first aim, in other words, is to identify differences between groups to better understand how individual and contextual factors increase the likelihood of juvenile justice involvement.

Distinguishing COY and non-COY is an important first step in better understanding the COY population. However, focusing only on the differences between these two groups ignores the variance that is bound to exist within the COY population. Certain factors might increase the likelihood of a youth crossing over, but these individual, developmental, and contextual factors come together in different ways to shape the experiences of any individual youth. Some studies (e.g. Jonson-Reid & Barth, 2000) have used samples of specific subgroups of youth (e.g., youth in detention), but no study to date has attempted to identify subgroups of youth within this population based on a combination of demographic and developmental factors and experiences in both systems.

Hence, the aim of Study 2 was to explore differences within the COY group with the goal of uncovering different patterns in individual factors, developmental histories, and level of involvement in both systems. By not treating all system involvement as equal but instead exploring how certain variables on both the child welfare and juvenile justice side tend to cluster together in patterns, there is an opportunity for systems to better match services and supports meet the different needs of youth. Early identification of the groups in the juvenile justice system provides the opportunity for certain treatment protocols or other safeguards to be put in place to prevent further involvement in the juvenile justice system. A better understanding of the profiles

of youth who are served in both systems also provides information on how to manage the coordination of services between the two systems.

Thus, the broader study is designed both to understand what makes COY distinct from other youth and also explore the heterogeneity that exists within the COY population. This study is inherently exploratory; because of the difficulty in systematically identifying COY, there are many unanswered questions about who they are and what factors are associated with deeper involvement in systems. The approach of this study is to describe the COY population in one context to learn more about how experiences with systems shape experiences and influence outcomes. The information gained in this study is intended to help agencies better understand the COY population and possibly alter the developmental trajectories of youth at risk for crossing over. Similarly, for youth already involved in both systems, a better understanding of the variety of circumstances and developmental histories can allow for the judicial system to provide services that might help prevent further adverse outcomes.

Study 1: Between-Group Comparisons

The aim of the first study is to identify which factors might differentiate youth who crossover from youth who have child welfare involvement but no juvenile justice involvement. The first set of questions takes a variable-centered approach to identify factors that are predictive of child welfare-involved youth have contact with the juvenile courts; beginning within a variable-centered framework allows for comparisons of current findings with previous studies that have taken a similar approach. Next, because of the established importance of timing of maltreatment, a person-centered approach is used to first establish different trajectories of maltreatment. For example, one trajectory might be marked by consistent child welfare involvement from childhood through adolescence, whereas another trajectory might show a

significant number of allegations early in childhood without any subsequent involvement. This is person-centered because the different trajectories create unobservable, latent subgroups that are then used to examine differences in if youth crossover in the juvenile justice system. Using trajectories, rather than age at first maltreatment and number of subsequent allegations, allows for a more complete consideration of the maltreatment history.

Study 1 variable-centered research questions:

RQ 1.1 Among the sample of child welfare-involved youth, are gender and race/ethnicity associated with an increased likelihood of crossing over?

RQ 1.2 Are certain types of maltreatment allegations predictive of crossing over?

RQ 1.3 Does the level of involvement within the child welfare system impact the likelihood of crossing over?

RQ 1.4 Are there family risk factors identified by child welfare workers early in their involvement with cases that are predictive of youth crossing over?

RQ 1.5 Among the sub-sample of youth who have experienced an out-of-home placement, are age at placement, type of placement, and number of placements predictive of crossing over?

Study 1 person-centered research questions:

RQ 1.6 Among the population of child welfare-involved youth, are there distinct trajectories based on the onset, frequency, and duration of maltreatment?

RQ 1.7. Are these trajectories predictive of crossing over?

Study 2: Within-Group Comparisons

Youth can experience a variety of levels of involvement in the child welfare system, from a single allegation of maltreatment that is investigated and easily resolved to prolonged involvement in the system with potential out-of-home placements or termination of parental

rights. Similarly, there is a range of factors that can characterize the first contact with the juvenile justice system involvement: age at first offense, type of offense (delinquent vs. status offender), and severity of offense. Further, youth can start off in either system and receive services concurrently or at different points in time. To date, COY have been treated as a homogenous group without any accounting for the various differences that might characterize diverging experiences in each system. Using a person-centered approach, Study 2 aims to identify subgroups within the COY population.

Study 2 research questions:

RQ 2.1 Within the sample of crossover youth, are there distinct subgroups that can be distinguished from each other based on the nature and severity of their involvement in both systems?

RQ 2.2 Can the existence of these subgroups be validated by establishing differences on factors separate from, but related to, the factors used to determine groups?

CHAPTER THREE: METHODS FOR STUDY 1

Data for this study come from administrative records from two Connecticut state agencies: The Department of Children and Families (DCF) and the Court Support Services Divisions (CSSD). As part of a larger study, each agency provided data on a cohort of youth born between 1996-2002 who were served in their systems. The agencies shared data with identifying information with one another and through probabilistic matching procedures established which youth were served in both systems. De-identified data sets, each with a common identifier to indicate youth appearing in both data sets, were then provided to the University of Connecticut Center for Applied Research in Human Development. This resulted in

two data sets with full information on youth in the 1996-2002 cohort served in both DCF and CSSD respectively.

The child welfare data from DCF includes information on demographics, reports of maltreatment (type of alleged maltreatment, date of report, and whether each allegations was substantiated or not), and information, where applicable, on episodes in out-of-home care (dates, length of stay, type of placement, number of placements within an episode). The juvenile justice data includes information on demographics, docket file dates, offense type, handling decision, and the disposition for each case.

Study 1 Sample

For the purposes of this study, we focus on youth born in 1996. These youth have child welfare and juvenile justice involvement data up through the time they were 16 because data were culled at the end of 2012. Younger cohorts were excluded because there are likely youth who will go on to cross over but simply have not yet due to age. They also, depending on timing, might have experienced the effects of different policies in both the child welfare and juvenile justice systems; youth born in the same year are more likely to have had similar experiences if they were in the systems at the same time. Child welfare involvement was defined as having at least one substantiated allegation record in the DCF data set. There are 7,268 youth born in 1996 who had at least one record of a substantiated allegation; descriptives are presented in Table 1. The sample was relatively evenly split between genders. The sample is 44% White, 25% Black/African American, and 20% Hispanic. Another 11% of the sample was identified as multiracial, Asian, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, or as unknown. Because these individual categories were small they could not each be individually included in the analyses; however, instead of losing 11% of the sample they were combined into

a category as other. While this is less than ideal for detecting the effects of race and ethnicity for these groups, it is a strategy that allows these individuals to be retained in the sample and allows for contrasts between these and the three other categories.

The most common type of substantiated allegation was physical neglect with 69% of the sample experiencing this form of maltreatment (note that individuals can experience multiple forms of maltreatment so the percentages do not total 100). The average age at first allegation was 5.68 years ($SD=4.57$). Nearly 34% of the sample had at least two separate reports where maltreatment was substantiated (meaning not just multiple allegations at one point in time, but separate points in time with allegations that were investigated and substantiated); the exact number of separate reports ranged from 1 to 17 ($M=1.54$, $SD=0.99$). Over 22% of the sample experienced an out-of-home placement. Of those who experienced an out of home placement, they were on average 5.88 (4.91) years old at first placement and they had an average of 1.26 (0.571) placements.

Juvenile justice involvement was defined as having a docket opened in the juvenile court. The docket could be for either a delinquency or status offense. A delinquency offense is an act committed by a juvenile that an adult would also be prosecuted for (e.g., robbery). A status offense is an action prohibited based on an individual's status or age (e.g. truancy). This is a broader definition than some previous studies that have looked exclusively at delinquency petitions. Additionally, for this study we restricted juvenile justice involvement to include petitions that occurred at least six months after the first substantiated maltreatment allegation; this was done to limit the sample to those who had child welfare contact prior to their first juvenile justice contact. COY in the broadest definition can include youth who first encounter the systems simultaneously or encounter the juvenile justice system first; however, because these

analyses are intended to use child welfare factors as predictors of crossing over, we wanted to ensure child welfare involvement preceded juvenile justice involvement. Of the sample, 1207 (16.6%) youth met this definition of crossing over.

Table 1. DCF-involved sample characteristics (N=7,268)

Variable	N	%
Gender		
Male	3655	50.3
Female	3576	49.2
Missing/Unknown	37	0.6
Race/Ethnicity		
White	3185	43.8
Black/African American	1820	25.0
Hispanic	1460	20.1
Multiracial	298	4.1
Asian	84	1.2
American Indian/Alaskan Native	18	0.2
Native Hawaiian/Pacific Islander	7	0.1
Unknown	396	5.4
Type of Substantiated Allegation		
Physical Neglect	5038	69.3
Emotional Neglect	3003	41.3
Physical Abuse	858	11.8
Educational Neglect	495	6.8
High Risk Newborn	229	3.2
Medical Neglect	395	5.4
Sexual Abuse	411	5.7
Maltreatment History		
Any repeated sub. alleg.	2461	33.9
Exactly 2 sub. allegations	1404	19.3
Exactly 3 sub. allegations	551	7.6
4 or more sub. allegations	271	3.7
Family Risk		
Substance Abuse	3505	48.2
Domestic Violence	3213	44.2
History of unsub. allegations	1274	17.5
Placement Information		
Ever in a CPS out-of-home placement	1628	22.4

Study 1 Variables

The DCF and juvenile justice data sets both provide information on gender, race/ethnicity, and date of birth for youth. Both agencies altered youth birth dates by adding or subtracting up to three days to further protect against identification. Below is a description of the child welfare data used to predict crossing over.

Measures of maltreatment. The DCF data set provided information on all allegations in which youth in the specified cohort have been named as victims. The categories of maltreatment were physical abuse, physical neglect, emotional abuse, emotional neglect, educational neglect, sexual abuse, medical neglect, moral neglect, and high-risk newborn. Dates of each allegation report and substantiation were provided. From this information additional variables were derived: the age of the child at first substantiated allegation, the number of substantiated reports (as a measure of repeated maltreatment and recidivism in DCF; there is a total number as well as an indicator of children involved once, twice, three times, or four or more times), the number of substantiated allegations in each year of life, and the total number of days a youth had an open DCF case. The number of reports and total number of days spent receiving DCF services are proxies for the severity of maltreatment.

Out-of-home placement information. The DCF dataset contains a record for each episode of out-of-home placement for youth in the DCF data, which includes the length of stay of each episode of out-of-home care, the type of placement (e.g., placement with relative, foster home, group home), the number of placements within each episode (e.g., if a youth lived in two different foster homes), the age of the youth at placement and discharge, and the reason for discharge from an out-of-home placement (e.g., reunified with family, adopted). These variables are examined for the subset of youth who experienced an out-of-home placement. Again, experiencing an out-of-home placement is one indicator of a more severe maltreatment history.

Risk indicators. The data set also includes risk assessments on the families. Prior to 2007, all families were given a DCF risk assessment that covered 24 categories; for each category a case worker scores the family on a risk scale from none to low to medium to high. An overall risk score using the same categories was also produced. After 2007, social workers completed the Structured Decision Making (SDM) risk assessment (Children’s Research Center, 2008) for abuse and neglect which has 10 items that gauge risk of neglect and 10 items that gauge risk of abuse; most items are yes/no questions. Comparing these two instruments, there were two items of interest that were assessed in both instruments: an indicator of substance abuse in the home and an indicator of domestic violence in the home. A substance abuse indicator was created for children in families that scored as a “yes” on that SDM item or were indicated to have substance abuse as a medium or high risk on the original DCF risk assessment. Similarly, a domestic violence indicator was created for children in families that scored as a “yes” on that SDM item or were indicated to have domestic violence as a medium or high risk on the original DCF risk assessment.

Using the dates of all allegations, a dichotomous variable of children who had an unsubstantiated allegation at least one year prior to their first substantiated allegation was created. This is an indicator of known history of ongoing family safety concerns that did not initially rise the level of intervention. This variable represents a level of DCF involvement and is included as a family risk factor.

Juvenile justice involvement. The juvenile justice data set provides a great deal of information on the dates and types of offenses, handling decisions, and outcomes. The only variable used from the dataset used is a dichotomous indicator of a youth having a case opened in the juvenile courts. This variable indicates juvenile justice involvement and is used as the

indicator of a youth crossing over. This is a definition of juvenile justice involvement is consistent with the one used by Ryan and Testa, though their definition did not include status offenses.

Study 1 Analysis Plan

Logistic regression is used for the first set of analyses. This technique is appropriate for modeling how certain factors affect the probability of experiencing a binary outcome, in this case having a record in the juvenile justice system. In order to compare results to a previous similar study using the same technique (Ryan & Testa, 2005), variables were entered in three separate blocks: child demographics, maltreatment information, and placement in out-of-home care. A fourth block of variables (not included in the prior study) designed to capture other sources of risk was then entered to see if they influence the probability of youth crossing over. At each level, gender interactions were included.

In addition to the logistic regression analyses, another set of analyses was planned to provide a person-centered look at the role of timing of child welfare involvement and its relationship with crossing over. While logistic regression results provide information on the average effect of each additional year later of maltreatment first occurring on crossing over, latent class growth analysis (LCGA) detects subgroups of youth as defined by a maltreatment trajectory. The underlying idea in the approach is that maltreatment does not occur in the same way for everyone, but instead there are distinct subgroups where each subgroup is defined by their developmental trajectories (Nagin, 1999). This means that, when looking at an outcome over time, one can observe variation not only in where individuals start and their rates of change, but the variations in the actual “shape” of the trajectories for different subgroups.

In these analyses, the number of substantiated allegations was calculated for each year of life for the first 16 years. This resulted in each individual having 16 data points, each a count of the number of allegations. These data then identify trajectories; these trajectories were then tested to see if they were predictive of youth crossing over. LCGA requires the number of trajectories must be specified a priori as the method does not produce a suggested number. The model can be run with multiple times with different numbers of trajectories and then compared to one another to see which is the best fit. D'Unger, Land, McCall, and Nagin (1998) suggest using the Bayesian Information Criterion (BIC) to make comparisons between models with varying levels of trajectories to determine the ultimate number.

CHAPTER FOUR: RESULTS STUDY 1

Study 1: Variable-centered Analyses

The sample of 7,268 youth born in 1996 was used to model the probability of having a record in the juvenile justice system. At each stage of the model, gender interactions were included to determine if variables differentially affected males and females; however, in displayed results, only significant interactions are displayed to conserve space. Unlike previous findings, we did not find enough significant gender interactions to justify running separate models, so all of the reported findings are for models that include both males and females. Findings from the regression analyses with the full sample are presented in Table 2. In the first step of the model, only demographic characteristics were entered. In the second step, factors relating to the maltreatment and child welfare services were entered. Finally, in the third step, factors relating to indicators of family risk were included.

In the regression tables, the $\text{Exp}(b)$ column reports the estimated odds ratio for each variable. This value estimates the degree to which each of the independent variables influences

the likelihood of a youth crossing over. For gender, females are the reference group. For race/ethnicity, White is the reference group.

Males are significantly more likely to crossover than females; specifically, the odds of crossing over are 2.36 times greater for males compared to females. The odds of crossing over are 1.91 times greater for African American youth compared to White youth and 1.80 times greater for Hispanic youth compared to White youth. There is not a significant difference between those youth in other categories compared to White youth. There is no significant interaction between gender and race. The age of first substantiated maltreatment is a significant predictor of crossing over, with each additional year resulting in a 1.07 times greater odds of entering the juvenile justice system. On this variable, however, there is a significant interaction with gender. In this case, the effect of age at maltreatment is reduced for males. This suggests that the link between the later timing of maltreatment and crossing over is stronger for females.

Physical neglect is associated with a significant decrease in the likelihood of a youth crossing over. Repeated maltreatment also had a strong effect on the odds of a youth crossing over. Experiencing a second report makes the odds of crossing over 1.45 times higher compared to youth experiencing only one case opening in child welfare; experiencing three reports increases the odds by 1.73 times and four or more reports increases the odds by 3.51 times. Experiencing at least one out-of-home placement also increased the odds of crossing over by 1.49.

Finally, other indicators of family risk were examined. When parental substance abuse was indicated by the DCF worker, the odds of crossing over are 1.93 times greater. However, there was a significant interaction with gender, which suggests that household substance use affects females more strongly than males. Having a history of DCF involvement that resulted in

unsubstantiated allegations at least a year prior to the first substantiated allegation was found to increase the likelihood of crossing over. Again, there was an interaction with gender. However, in this case, the effect was more pronounced for males than females. The presence of domestic violence did not increase the likelihood of youth crossing over.

Analyses for youth who experience an out-of-home placement. The next set of analyses focus on the 1,628 youth who experienced at least one out-of-home placement. These analyses allow for exploring if factors related to the out-of-home placement are related to an increased likelihood of crossing over. Results are reported in Table 3. Again, gender interactions were tested at each level and only significant interactions are displayed. With this subgroup, the overall effect of gender remained significant with odds of crossing over being 3.19 times higher for males than for females. Instead of age at maltreatment, the age at first out-of-home placement was used; each additional year old at placement results in a 1.12 times greater odds of entering the juvenile justice system. The odds of crossing over are 2.50 times greater for African American youth compared to White youth.

A variety of variables related to maltreatment and child welfare service history were examined. Of these only three were significant predictors of crossing over. Having experienced physical abuse increased the odds of crossing over by 1.72 times. Experiencing multiple reports to DCF increased the odds of crossing over when there are four or more reports, representing those who experienced the highest rate of recidivism in child welfare. Experiencing more than one episode of an out-of-home placement increased the odds of crossing over, but there was a significant gender interaction showing this effect is lower for males than females. Finally, in examining other indicators of family risk, only substance abuse was found significant. Odds of crossing over increased by 2.20 times when parental substance abuse was indicated.

Table 2. Logistic regression: Predicting crossing-over for full sample (N=7,268)

Independent Variable	Model 1			Model 2			Model 3		
	<i>b</i>	S.E.	Exp(<i>b</i>)	<i>b</i>	S.E.	Exp(<i>b</i>)	<i>b</i>	S.E.	Exp(<i>b</i>)
<i>Child demographics</i>									
Gender	.497***	.111	1.644	.594***	.173	1.810	.860***	.198	2.363
Age at maltreatment	.032**	.010	1.032	.062***	.011	1.064	.068***	.012	1.070
African American	.621***	.123	1.861	.590***	.126	1.810	.647***	.128	1.910
Hispanic	.543***	.130	1.720	.487***	.133	1.627	.589***	.135	1.802
Race other	.110	.178	1.117	.158	.181	1.171	.218	.183	1.243
Age at maltreatment * Gender	-.011	.015	.989	-.012	.015	.989	-.041**	.016	.960
<i>Maltreatment history</i>									
Physical abuse				.184	.122	1.202	.211	.124	1.235
Physical neglect				-.115	.117	.891	-.234*	.119	.791
Two substantiated reports				.515***	.130	1.673	.372**	.132	1.451
Three substantiated reports				.763***	.177	2.144	.573**	.181	1.773
Four or more substantiated reports				1.454***	.209	4.281	1.255***	.212	3.507
Child placed out-of-home				.492***	.117	1.635	.395***	.118	1.485
<i>Family Risk</i>									
Substance Abuse							.660***	.114	1.934
Domestic Violence							.175	.108	1.191
History of unsubstantiated allegations							.290*	.128	1.337
SA * Gender							-.518***	.148	.595
Unsub. history * Gender							.513**	.166	.053
Model Chi-square (<i>df</i>)	134.639 (9)***			323.560 (21)***			439.126 (27)***		

* indicates significance at the $p < .05$ level, ** indicates significance at the $p < .01$ level, *** indicates significance at the $p < .001$ level

Table 3. Logistic regression: Predicting crossing-over for full sample (N=7,268)

Independent Variable	Model 1			Model 2			Model 3		
	<i>b</i>	S.E.	Exp(<i>b</i>)	<i>b</i>	S.E.	Exp(<i>b</i>)	<i>b</i>	S.E.	Exp(<i>b</i>)
<i>Child demographics</i>									
Gender	.497***	.111	1.644	.594***	.173	1.810	.860***	.198	2.363
Age at maltreatment	.032**	.010	1.032	.062***	.011	1.064	.068***	.012	1.070
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Race other	.110	.178	1.117	.158	.181	1.171	.218	.183	1.243
Age at maltreatment * Gender	-.011	.015	.989	-.012	.015	.989	-.041**	.016	.960
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* indicates significance at the $p < .05$ level, ** indicates significance at the $p < .01$ level, *** indicates significance at the $p < .001$ level

Study 1: Person-centered Analyses

Regression analyses examine the average effect of variables on the likelihood of a youth crossing over. This assumes that all youth are from one population, and on average individuals experience the same variables in the same way. In the regression framework it is possible to look at observable subgroups to see if effects are experienced differentially. For example, the analyses above tested for gender interactions and some variables were more significant predictors for one gender over another.

However, variable-centered approaches cannot look at differences in subgroups that are not directly observable. Given the important role of onset and chronicity of maltreatment, timing is an important factor to examine more closely. Rather than assuming there is one trajectory of maltreatment that individuals vary around, a person-centered approach identifies subgroups based on the frequency and duration of their child welfare involvement. The regression results suggest later maltreatment is more predictive of crossing over, but this is only measured by age at first substantiated allegation and indicators of recurrence. Latent class growth analysis (LCGA) is a technique that detects subgroups that are defined by different trajectories across time. For each individual a frequency count of the number of substantiated allegations in each year of life, resulting in sixteen data points for each individual.

MPlus 7.3 (Muthen & Muthen, 2014) was used to fit models with different numbers of classes, ranging from 2 to 6. Cubic models were fit because they allow maximum flexibility and the fit statistics compared to linear and quadratic models with the same number of classes were superior. Fit statistics for the cubic models with 3-6 trajectories are presented in Table 4. Fit was evaluated by jointly considering likelihood ratio chi-square statistic (L^2), the Bayesian Information Criteria (a comparative measure of fit that emphasizes parsimony; lower values are

better), classification quality, and interpretability. The best-fitting model was the one with five trajectory classes. The Lo-Mendell-Rubin (LMR) likelihood ratio test is used to compare models with k classes to the more parsimonious $k-1$ model; significant p -values indicate that the more complex model is a better fit. In testing the five-class model against the four-class model, the LMR test supported the five-class model ($p < .001$). The five trajectory class model also had the lowest BIC value compared the other models. Additionally, in considering the five versus six-class solution, the five-class model was more meaningfully interpretable because the six-class solution yields a class that has fewer than 1 percent of the sample in it.

Table 4. Model-fit statistics for LCGA analyses

	AIC	BIC	SSA BIC	LMR p value
2 class	123600.988	123663.009	123634.409	<.001
3 class	119823.234	119919.712	119875.415	<.001
4 class	116603.673	116734.607	11674.229	<.001
5 class	114671.865	114837.255	114760.988	<.001
6 class	114681.864	114881.710	114789.554	.054

Graphic representations of these trajectory classes are presented in Figure 1. Entropy is a measure of how certain the classifications are in a model. While higher values (1.0 is highest) are favored, there are not clear cut-offs for entropy. The five-class model has an entropy of 0.754. Once the five-class solution was found to be the best indicator, a binary variable indicating whether an individual had contact with the juvenile justice system subsequent to their involvement in DCF was added as a distal outcome. Significant differences were found among the classes on likelihood of crossing over ($\chi^2 = 107.665, p < .001$). These differences are reported below along with other descriptive statistics on the classes.

Figure 1. Five-class trajectory model

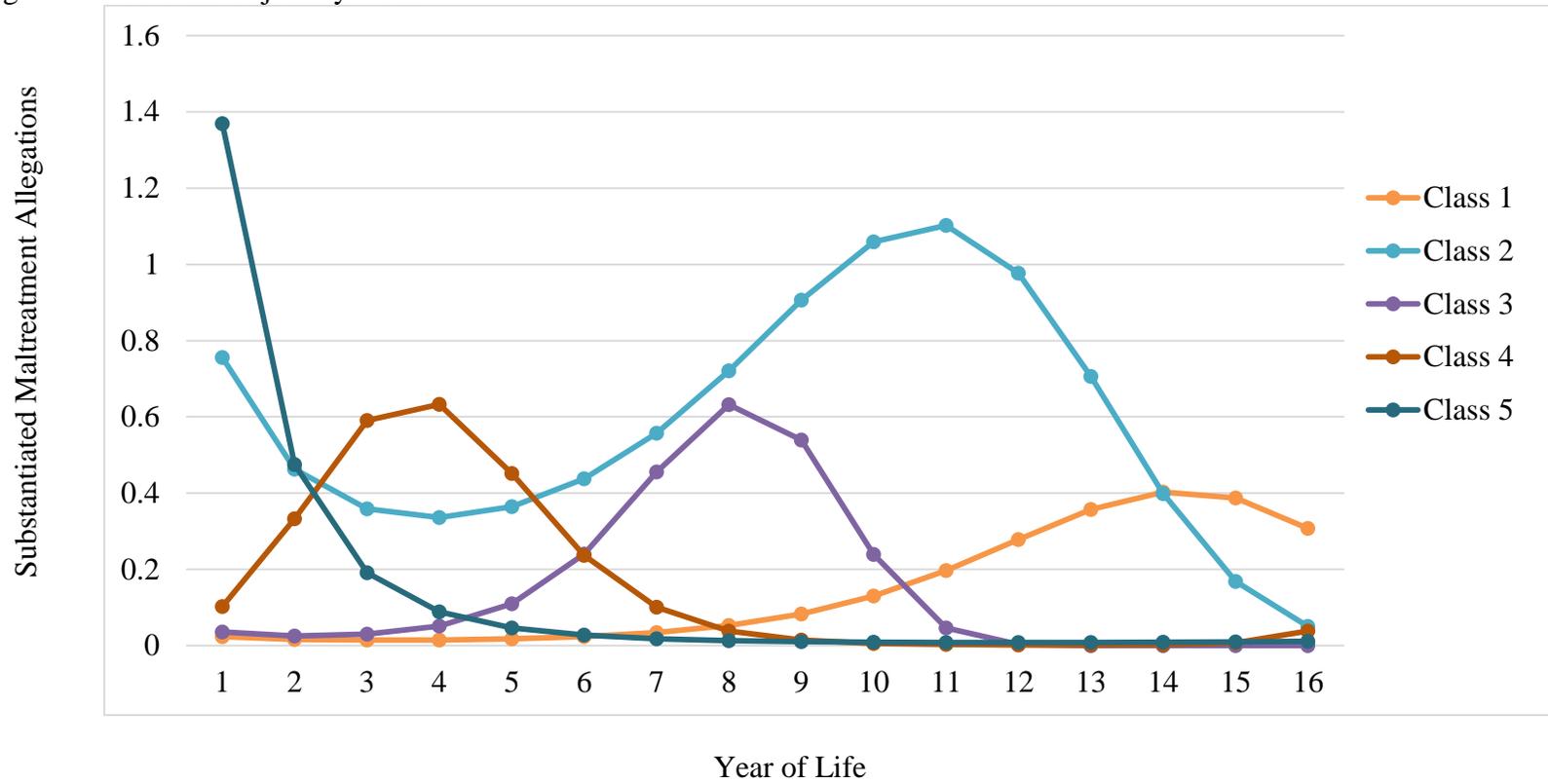


Table 5. Characteristics by most likely trajectory class membership

	Class 1: Late childhood onset, increasing (n= 1816)	Class 2: Persistent involvement (n= 402)	Class 3: Middle childhood peak (n= 1678)	Class 4: Early childhood peak (n= 1834)	Class 5: Infancy, decreasing (n= 1538)
Percent of total sample	25.0%	5.5%	23.1%	25.2%	21.2%
Crossed over into juvenile justice system	22.3%	30.8%	14.4%	13.7%	12.0%
Gender					
Male	46.0%	49.5%	51.4%	53.8%	51.2%
Female	54.0%	50.5%	48.6%	46.2%	48.8%
Race/Ethnicity					
White	49.8%	49.0%	46.7%	41.2%	35.4%
Black/African Amer.	20.6%	25.9%	23.2%	25.7%	31.3%
Hispanic	20.9%	16.7%	20.6%	20.9%	18.5%
Other	8.6%	8.5%	9.5%	12.2%	14.8%
Child welfare system involvement					
Age at first sub. allegation (mean)	11.64	4.10	6.89	3.22	0.75
Number of sub. allegations (mean)	5.95	19.7	6.35	6.22	5.02
Repeated report	30.7%	93.0%	28.5%	34.5%	27.2%
Total days of DCF involvement	653.41	1866.29	779.56	893.03	927.07
History of unsub. alleg	29.7%	21.4%	26.2%	11.0%	0.5%
Type of allegations (percent experienced)					
Physical Neglect	65.6%	96.8%	72.5%	73.2%	58.3%
Emotional Neglect	39.6%	77.4%	37.0%	43.2%	36.3%
Physical Abuse	11.1%	21.6%	12.8%	12.4%	8.2%
Educational Neglect	12.4%	19.4%	8.3%	2.3%	0.6%
High Risk Newborn	0.1%	2.0%	0.8%	0.7%	12.6%
Medical Neglect	5.7%	14.4%	4.0%	4.2%	5.9%
Sexual Abuse	11.1%	10.2%	4.7%	4.3%	0.8%
Experienced an out-of-home placement	15.1%	51.2%	17.8%	21.7%	29.4%
Substance abuse	39.9%	78.6%	47.9%	45.0%	54.3%
Domestic Violence	35.6%	71.6%	43.0%	46.0%	46.3%

Description of trajectory classes. Profiles on the characteristics in the five-class solution are presented in Table 5. For purposes of display, individuals were assigned to their most likely class. The first row shows the percent of the sample assigned to each class. Individuals vary in their probabilities of class assignment due the latent nature of the trajectory class variable; therefore, it is important to use caution when comparing across classes on other variables. The second row shows the likelihood of crossing over. This relationship was statistically tested in a three-step method (Vermunt, 2010) in which the likelihood of crossing over was regressed on most likely class membership taking into account the misspecification in class assignment. Other descriptive information is then presented to provide a general description of the classes. However, due to the fact that our entropy value was adequate but not great, statistical comparisons across the groups were not made on all of these additional variables.

Trajectory 1: Late childhood onset. This is the second largest trajectory class accounting for 25.0% of the sample. This class generally does not have substantiated allegations occur until the transition to adolescence (mean age at first allegation is 11.64 years). From there likelihood of involvement steadily increases. However, nearly 30% of this group was likely to have had prior contact with the child welfare system that did not result in a substantiation of neglect. This class is more likely to crossover than all of the other trajectory classes, except for trajectory class 2.

Trajectory 2: Persistent involvement. This trajectory class accounts for only 5.5% of the sample, but it is marked by ongoing involvement in child welfare throughout childhood and into adolescence. After early contact with the child welfare system, involvement persists but decreases somewhat until it peaks around early adolescence. The ongoing involvement is further evidenced when other variables are examined. This trajectory class has the longest average

number of days with an open case in the child welfare system (M= 1,866.29) and the highest number of substantiated allegations. This trajectory class also has the highest rate of repeated maltreatment, with 93% of youth having two separate cases opened at different points in time. Compared to the other classes, Trajectory Class 2 appears to have higher rates of experiencing different types of maltreatment; nearly all (96.8) experienced physical neglect, 77.4% experienced emotional neglect, 21.6% experienced physical abuse, and 19.4% educational neglect. Further supporting the more significant child welfare history of this group, over half (51.2%) experienced at least one out-of-home placement. Trajectory Class 2 also has the highest rates of identification of substance abuse and domestic violence risks in the family. Overall, Trajectory Class 2 appears to experience more risks and more acute involvement with child welfare than the others across a number of variables.

Trajectory Class 2 is also the most likely to crossover. This is a meaningful result when contrasted with the regression analyses; while the regression results suggest later involvement is more predictive of crossing over, the person-centered results suggest that the group most likely to crossover has early and ongoing involvement. However, because of the relatively small size of Trajectory Class 2, when examined in a variable-centered framework the larger Class 1 group is more influential when looking at age at first contact. While this is certainly one trend, the regression analyses neglect to represent youth in Trajectory Class 2, a small but potentially very risky group. Trajectory Classes 3, 4, and 5 are less likely to crossover than Trajectory Classes 1 and 2 and are not statistically significantly different from each other.

Trajectory 3: Middle childhood peak. This trajectory class accounts for 23.1% of the sample. Trajectory Class 3 had a significantly lower rate of crossing over than Trajectory Classes 1 and 2. The cross over rate for this class was 14.4%. This class trajectory shows low likelihood

of involvement from infancy through age 6 or 7. Likelihood of involvement peaks at that time then drops off. This period might align with the start of formal schooling where youth have more formal contact with others in the community and maltreatment might become more visible. However, 26.2% of these youth had at least one contact with DCF prior to the episode that resulted in a decision of substantiated maltreatment, suggesting that over a quarter of these youth were the target of child welfare concerns and known to the system before becoming more formally involved. Only 17.8% of youth in Trajectory Class 3 experienced an out-of-home placement.

Trajectory 4: Early childhood peak. This is the largest group, accounting for 25.2% of the sample. This trajectory class shows a peak in maltreatment around age 2 or 3. After this period, class 4 is not likely to have further involvement. The most common maltreatment types in this group are physical neglect (73.2%) and emotional neglect (43.2%). The cross over rate for this class is 13.7%; this rate was significantly lower than Trajectory Classes 1 and 2 but not different than Trajectory Class 3.

Trajectory 5: Infancy, decreasing. Finally, trajectory 5 accounts for 21.2% of the sample. This group has high levels of involvement with the child welfare system in the first two years of life, but then lower likelihoods of contact outside of this period. Supporting the validity of this latent class, this class includes the highest number of high-risk newborn allegations. There are also very low levels (0.5%) of previous allegations, which is indicative of the very early involvement this group experiences. Nearly 30% of this group experienced an out-of-home placement; the only group with a higher rate is Class 2. The crossover rate for this class is 12.2%; this rate was significantly lower than Trajectory Classes 1 and 2 but not different than Trajectory Classes 3 and 4.

CHAPTER FIVE: METHODS STUDY 2

Study 2 uses the same data set as described above. The measures of DCF involvement and risk that are used are the same as those described for Study 1. Because Study 2 focuses only on youth who have crossed over, it uses a sub-sample of the Study 1 sample. This sample is described below. This is followed by an overview of the measures of DCF and CSSD involvement used in establishing the latent classes and the variables used to validate the latent classes.

Study 2 Sample

The focus of this study was to understand the heterogeneity that exists within the crossover youth sample. For this reason, the sample included all youth born in 1996 who had at least one substantiated allegation of maltreatment and at least one docket opened in the juvenile court. Among the 7,268 youth with child welfare involvement (descriptives given in Study 1), 1312 (18.1%) met this definition of crossing over. This number is higher than the 1,207 COY in study 1 because it includes youth whose juvenile justice contact preceded their child welfare involvement. Characteristics of the sample are reported in Table 5 below.

Study 2 Measures

Study 2 uses the same child welfare variables as Study 1, which are described above. Because all youth in the Study 2 sample are crossovers, additional variables on the level of involvement in the juvenile justice system are now included. LCA uses categorical variables to classify individuals into groups. Below is the description of the eight categories used in the current LCA.

Type of maltreatment. Four dichotomous variables indicating the experience of different types of maltreatment were created. The types of maltreatment considered were physical abuse, educational neglect, emotional neglect, and physical neglect. These were the four most common

Table 5. Study 2 sample characteristics

Variable	n	%
Gender		
Male	781	59.5
Female	531	40.5
Missing/Unknown		
Race/Ethnicity		
White	478	36.4
Black/African American	411	31.3
Hispanic	308	23.5
Multiracial	61	4.6
Asian	5	0.4
American Indian/Alaskan Native	4	0.3
Native Hawaiian/Pacific Islander	1	0.1
Unknown	44	3.4
Type of Substantiated Allegation		
Physical Neglect	933	71.1
Emotional Neglect	529	40.3
Physical Abuse	209	15.9
Educational Neglect	211	16.1
High Risk Newborn	22	1.7
Medical Neglect	119	9.1
Sexual Abuse	80	6.1
DCF Recidivism		
Single time involvement	693	52.8
Exactly 2 sub. allegations	308	23.5
3 or more sub. allegations	311	23.7
Family Risk		
Substance Abuse	735	56.0
Domestic violence	645	49.2
History of unsub. allegations	359	27.4
Placement Information		
Ever in a CPS out-of-home placement	407	31.0
Juvenile Justice Level		
Pure status offender	692	52.7
Delinquent once	307	23.4
Delinquent twice	138	10.5
Delinquent three or more	175	13.3

types of maltreatment experienced in the sample. Youth could experience more than one of these or none of this (in the event their only allegation was another form of maltreatment).

Out-of-home placement. A dichotomous variable was created to indicate youth who experienced at least one episode in DCF care.

DCF recidivism. Using the information provided on case opening dates and substantiation of allegations, a variable was created to indicate recidivism in DCF. Youth either had a single substantiated case with DCF, exactly two substantiated cases with DCF, or three or more cases. These cut-off points were chosen because of the nearly half of youth who went on to experience a subsequent case, half of those only had one more case. This suggested a qualitative difference between those who had two contacts and those with three or more.

Substance abuse. As described in Study 1, DCF case workers assess families on a number of risks. A dichotomous variable indicated whether a youth had ever been a victim in a case where substance abuse was indicated as a medium or high risk.

Domestic violence. Similar to the substance abuse variable above, a dichotomous variable indicated whether a youth had ever been a victim in a case where domestic violence was indicated as a medium or high risk.

History of unsubstantiated allegations. While the definition of DCF involvement in this study is having a substantiated allegation, many youth had additional reports and allegations that were unsubstantiated. While these events might not have risen to the level of substantiation, they still represent contacts with the system and are indicators of potential risk. A dichotomous variable was created indicating whether, at least one year prior to the first substantiated allegation if there had been a report that was investigated and found to be unsubstantiated.

Level delinquency. In looking at the overall level of involvement, two factors are important to consider: the type of case (delinquency or status offender) and recidivism.

Delinquency cases are those that have charges that break a law, which applies to everyone regardless of age (e.g., assault). Status offender cases are those in which the offense is related to the age status of the youth; for example, running away from home and truancy are acts that only rise to the level of court attention when a youth is under a certain age. In determining a definition of recidivism, it is necessary to consider the distinction between repeated delinquent petitions compared to status offense petitions. To address these two concerns, a variable was created that looked at delinquency recidivism. The variable had four levels: status offender (youth who never had a delinquency offense, but had one or more status offenses), one time delinquency (youth who had exactly one delinquency offense), subsequent delinquency (youth with exactly two delinquency offenses), and chronic delinquency (youth with three or more delinquency offenses). Youth in the latter three categories may or may not have had status offenses as well.

Early juvenile justice contact. A dichotomous variable was created indicating whether a youth was under 13 at the time of their first contact with the juvenile justice system.

Additional validation variables. While the eight variable types above were chosen to determine the classes, additional variables are needed to compare the classes on. Because LCA is used inductively, it is necessary to use variables related to, but not used as, indicators in determining the classes to validate the classes. If the classes that come from the LCA do represent distinctive groups, they should also look different on other measures as well.

The child welfare variables used for validation are described in Study 1 and include: age at first maltreatment allegation, total number of allegations, and total number of days of DCF involvement. The juvenile justice variables were created from the CSSD data set. Because these variables were not discussed in Study 1, additional details are provided below.

The total number of dockets, of any type, was used as a measure of the frequency of involvement. The age at first juvenile justice contact was used. A variable was created to indicate if an individual was an “escalator,” where their first case was a status offense but they then went on to have delinquency cases later. This was an important validation variable as it suggests that there might be a period of time where a youth is known to the courts but has not yet risen to the level of delinquency. Each offense a youth commits is given a severity score; scores range from 1 to 99 with 99 being the most severe. For each youth, their maximum severity score was used. Classes were also compared on the disposition, or outcome, of each case, which falls into one of three categories: no further contact, community supervision, or commitment. Groups were compared on whether they ever experienced a level of supervision (vs. no further contact) and if they ever experienced a commitment. Finally, youth can have three pathways to crossing over: child welfare involvement prior to juvenile justice involvement, juvenile justice involvement prior to child welfare involvement, and becoming involved with both systems at the same time (within three months). Most youth (80%) entered child welfare first; these youth were compared to the others who either begin in juvenile justice or had somewhat simultaneous initial involvement.

Study 2 Analyses

The goal of Study 2 is to identify distinctive subgroups in a population that has previously been thought of as homogenous. There are many factors of both the child welfare history and initial juvenile justice involvement that likely interact with one another. A person-centered approach assumes there is an identifiable number of distinct patterns in the relationships between the variables. Latent class analysis (LCA) is model-based method that takes individuals responses to a number of observed categorical variables and assumes them to be indicators of a

latent categorical variable; the latent categorical variable represents the different and distinct subpopulations that exist in the data (McCutcheon, 1987). Within the groups identified by LCA individuals are relatively homogenous; between the groups individuals vary on their probabilities on the indicators.

Because they are both person-centered approaches, LCA and the previously described LCGA are both designed to detect subgroups. However, instead of looking for different trajectories on how one variable changes over time as is the case in LCGA, LCA instead looks at how individuals vary on a number of categorical variables to develop profiles of individuals that follow certain patterns. LCA is essentially cross-sectional and LCGA is an extension of the framework to look at data over time. Similar to LCGA, model fit is jointly determined by the L-M-R likelihood ratio test, Bayesian Information Criterion (BIC), AIC, classification quality, and interpretability.

CHAPTER SIX: STUDY 2 RESULTS

Model Selection

MPlus 7.3 (Muthen & Muthen, 2014) was used to fit models with different numbers of classes, ranging from 3 to 6. Fit statistics for the models with three, four, and five classes are presented in Table 6. The Lo-Mendell-Rubin (LMR) likelihood ratio tests measure how well the model fits the data by comparing models with k classes to models with $k-1$ classes. This measure supported the four-factor model over the three-factor and five-factor models. Additionally, because BIC imposes a penalty for additional parameters it evaluates competing models in terms of parsimony. The four-class model has the lowest BIC value. The four-class model has an entropy value is 0.86; this high value is good and indicates analyses by most likely class membership are warranted.

Table 6. Model-fit statistics for LCGA analyses

	Entropy	AIC	BIC	LMR <i>p</i> value
3 class	0.875	19376.320	19604.210	<.001
4 class	0.860	19211.185	19516.764	<.001
5 class	0.814	19151.358	19534.627	.194

Description of Classes

The four classes are presented in Table 7. LCA yields posterior probabilities indicating the likelihood of membership in each class for each individual case. For example, an individual's posterior probabilities for classes 1, 2, 3, and 4 might be .90, .05, .02, and .03. In presenting the profiles for classes and subsequent comparisons between classes, individuals are assigned to their most likely class, or the class with the highest posterior probability.

Class 1: Deeply involved youth. Class 1 accounts for 32.5% of the sample. This class has the most child welfare involvement, as measured by the chosen indicators, and has the highest rate of repeated delinquency. Across three types of maltreatment, physical abuse, emotional neglect, and physical neglect, Class 1 consistently has the highest or nearly the highest rate of occurrence. Class 1 has the highest rates of experiencing an out-of-home placement, with nearly 60% of the class having been placed in DCF care at some point. This class also has the highest rates of recidivism in DCF, with 68% of the sample having three or more cases in DCF. Only approximately a quarter of this class had a history of unsubstantiated allegations. There are also high rates on the family risk factors of substance abuse (80%) and domestic violence (73%). This class also has high rates of delinquent offenses, with 64% of the sample having repeated delinquency cases.

In comparing the classes on the validation variables, Class 1 continues to look the riskiest. They are the youngest at first DCF involvement, have the highest number of

substantiated allegations, and have the most days with a DCF case open. On the court side, they also have the highest number of dockets filed against them and are the most likely to experience a commitment, the most serious disposition of a case. They also experience the most amount of time between the onset of DCF involvement and juvenile justice involvement, suggesting that there is an ongoing and established history with the child welfare system prior to a youth crossing over.

Class two: Limited involvement youth. Class 2 is the smallest class, accounting for only 9% of the sample. This class also limited DCF and juvenile justice involvement. While other types of maltreatment are experienced at low rates, this class is really defined by having substantiated allegations of educational neglect. This class is the least likely to experience an out-of-home placement (fewer than 7% were placed in DCF care) and the other measures of family risk are also lowest for this group, with substance abuse indicated in 28% of cases and domestic violence in 18% of cases. This class has the highest rates of pure status offenders; nearly half of the sample never had delinquency charges. This group was most likely to have contact before the age of 13. It appears this group might really defined by issues around school, with both their DCF involvement and juvenile justice involvement potentially due to truancy (the most common status offense). The earlier contact age is likely due to earlier identification of issues by schools.

In looking at the validation variables, there is support that the type of child welfare and juvenile justice involvement of these youth are related to one another and that the patterns in both systems are distinct from the other classes. This class has the oldest age at first DCF contact and the shortest amount of time between DCF and juvenile justice contact and is the most likely to have juvenile justice contact prior to or simultaneous with their DCF involvement. They are

also the only groups with a significant lower severity score on their maximum offense type, supporting the finding that this class is most likely of the four to remain status offenders.

Class 3: Escalating involvement. Class 3 is the largest groups, accounting for 38% of the sample. Physical neglect, the most common allegations in the sample, was experienced by all individuals in Class 3. Over a quarter of youth in this class experienced an out-of-home placement. While most (75%) youth only had one case opened in DCF, approximately a quarter experienced a second case opening. However, it was relatively rare for there to be additional contact beyond the initial recidivism. Suggestive of ongoing issues and risk, over 30% of the sample had been reported to DCF, with allegations that were unsubstantiated, prior to having a report resulting in substantiated. For over half of the cases, substance abuse was indicated in the family risk assessment. As for juvenile justice involvement, nearly 90% had a delinquency charge and over half (53%) had repeated delinquency.

Class 4: Mixed involvement youth. Class 4 accounts for 20% of the sample. This group is the most likely to have very limited DCF contact; 90% of youth never have a subsequent case opened. Fourteen percent of this group experienced an out-of-home placement, lower than Classes 1 and 3 which shower greater DCF involvement. Not only is this group the least likely to recidivate, they are also the least likely to have a history of unsubstantiated allegations. In terms of types of allegations, Class 4 was the least likely to experience physical neglect. In fact, under 8% of the youth in this groups came to the attention of DCF because of physical neglect allegations. Given that physical neglect is by far the most common allegation, this suggest that while DCF involvement for this group is more limited in time and scope, the types of issues these families present with might be very different. It is not clear that the child welfare involvement is less severe, but the type of contact seems to be qualitatively different. While

Classes 1 and 3 seemed to differ on child welfare involvement by a matter of degree, Class 4 has a distinct pattern of allegations suggesting the nature of the presenting problems are different in kind than those with which Classes 1 and 3 present.

In terms of juvenile justice contact, Class Four has a lower delinquency rate than Classes One and Three and are also less likely to be chronically delinquent (3 or more cases). On the validation variables, Class Three looks similar to Class Four. One significant difference between the two classes is on the severity index where Class Four has a lower score than Class Three. Class Four also has a longer period of time between DCF and juvenile justice contact compared to Class Three.

Combining the Classes from Studies 1 and 2

The classes produced here in Study 2 evaluate the depth of involvement in both the child welfare and juvenile justice systems. Alternatively, the trajectory classes from Study 1 focused exclusively on timing of child welfare involvement. Table 9 shows how individuals are classified in the two categories. The figures in the table represent the percent of each of the trajectory class that are classified into each of the four involvement classes. Of the youth who were persistently involved in the child welfare system, 92% were also classified as deeply involved. This suggests both that that chronic maltreatment is associated with deeper juvenile justice involvement. The trajectory classes with increased with middle childhood and late childhood onset of maltreatment make up a disproportionate number of the limited involvement class. The last finding of note is that the infancy-limited trajectory makes up a disproportionate number of the mixed involvement classes.

Table 7. Latent classes on indicators

	Class 1	Class 2	Class 3	Class 4
Proportion of sample	.325	.090	.380	.204
Type of maltreatment				
Physical abuse	.249	.031	.057	.249
Educational neglect	.193	1.000	.018	.000
Emotional neglect	.658	.060	.173	.549
Physical neglect	.963	.170	1.000	.078
Out-of-home placement	.558	.066	.251	.141
DCF recidivism				
None	.004	.639	.745	.904
Once	.311	.266	.249	.083
Twice or more	.684	.095	.005	.013
History of unsub. alleg.	.249	.369	.305	.218
Substance abuse	.798	.280	.514	.398
Domestic violence	.728	.180	.404	.413
Delinq. level				
Status offender	.125	.491	.107	.168
Delinquent once	.235	.207	.359	.360
Delinquent twice	.189	.086	.189	.173
Delinquent 3+	.452	.216	.345	.300
JJ contact before 13	.436	.559	.357	.306

Table 8. Validation of latent classes

	Class 1 (n= 427)	Class 2 (n= 118)	Class 3 (n= 499)	Class 4 (n=268)	Contrasts
Gender					N/S
Male	.58	.53	.64	.57	
Age at first substantiated allegation	3.38	8.67	6.39	5.88	2>3,4>1**
Total number of substantiated allegations	15.94	6.01	6.99	6.12	1>2, 3, 4**
Total days of DCF involvement.	1861.56	848.51	997.64	790.76	1>2, 3, 4**
Total number of juvenile justice dockets	4.32	3.28	3.44	3.08	1>2, 3, 4**
Age at first juvenile justice contact	12.88	11.98	13.18	13.37	1, 3, 4>2**; 1<4*
Escalator	.21	.17	.17	.10	N/S
Avg. maximum severity index score	85.37	69.77	85.50	83.27	1, 3, 4> 2**; 3>4*
Supervision disposition	.58	.46	.55	.59	N/S
JJ commitment	.13	.03	.06	.07	1>2, 3, 4*
Years between DCF and JJ	8.52	1.36	5.55	6.47	1>4>3>2**
Not originating in DCF	.07	.52	.24	.21	

* indicates significance at the $p<.05$ level, ** indicates significance at the $p<.01$ level

Table 9. Comparison of classes from Studies 1 and 2: Percent of trajectory classes in each of the four involvement classes

Study 1 Trajectory Classes	Study 2: CW & JJ Involvement			
	Deep 32.5%	Limited 9.0%	Escalating 38.0%	Mixed 20.5%
Late childhood onset, increasing (n=493)	22.9	15.6	41.6	19.9
Persistent involvement (n=124)	92.0	2.4	4.0	0.8
Middle childhood peak (n=250)	23.2	12.8	44.8	19.2
Early childhood peak (n=258)	36.0	2.3	41.5	20.2
Infancy, decreasing (n=186)	25.3	0.0	37.6	37.1

CHAPTER SEVEN: DISCUSSION AND CONCLUSION

The goals of the current study were to identify factors that distinguish COY from youth with child welfare experiences with no subsequent juvenile justice contact and to identify subgroups within the COY sample that varied in their level of involvement in both systems. While limited prior research provided some hypotheses as to which factors would be predictive of crossing over, the approach in the current study was largely exploratory. Variable-centered and person-centered approaches were used to enhance the understanding of COY and their unique experiences. This discussion section begins with an overview of the primary findings placed in context with prior research. Next the strengths and limitations of the study are presented. Finally, recommendations and implications for both practice and future research are given.

Summary of Primary Findings

Impact of Timing

Prior research has suggested the timing of maltreatment is an important factor to consider in examining the likelihood of a youth crossing over. The current study examined the role of timing with both a variable-centered and person-centered approaches. The first set of between-group analyses is similar to the work of Ryan and Testa (2005), using logistic regression to identify factors among the child welfare-involved youth that were predictive of crossing over. For each additional year older a youth was at the time of the first maltreatment allegations, the odds were 1.07 times greater for crossing over. This finding is consistent with the Ryan and Testa results where each additional year older was associated with a 1.09 and 1.06 times greater odds of crossing over for males and females, respectively.

When timing was examined with the person-centered, trajectory-based approach the findings were more nuanced. These results did show a group with a trajectory defined by the onset of involvement in late childhood and early adolescence; consistent with the variable-centered results, this group was more likely than most others to crossover. However, the trajectory group most likely to cross over was actually the one marked by persistent child welfare involvement throughout childhood and into adolescence. This group crossed over at a rate of 30% compared to a crossover rate of only 22% in the late childhood onset group. However, the persistently involved group was also the smallest, accounting for only 5.5% of the sample. Because the variable-centered logistic regression approach aims to detect the average effect, the experiences of this small group are missed. Instead, the much larger late childhood onset group, accounting for 25% of the sample, has a much stronger influence on the calculations and the results convey their experiences.

The person-centered results are not inconsistent with the variable-centered results of both the current study and the Ryan and Testa study. There does appear to be a relationship between youth having later contact with child welfare and an increased likelihood of crossing over. However, the person-centered approach allowed for the identification of a group with early and persistent contact; it is these youth that are at the highest risk of crossing over. This finding is significant because it suggests two different pathways into crossing over. Even if the end result is similar (i.e., crossing over), their experiences leading up to crossing over are varied and likely require different prevention and intervention responses.

With timing of maltreatment established as having an important role in predicting which youth crossover, the next question is if it continues to be associated with the level and type of involvement in the juvenile justice system once a youth has already crossed over. The results of

this study suggest the answer to this question is less clear. When combining the results of the between groups and within groups analyses, the persistently involved youth were nearly all (92%) in the deeply involved group. However, the deeply involved group consisted of many more youth than just those who were on the persistent involvement trajectory. It appears that while trajectory of involvement is an important predictor of crossing over, there are a number of factors relating to child welfare involvement that are associated with deeper involvement in the juvenile justice system. These factors include experiencing physical abuse, experiencing multiple forms of maltreatment, and having been in an out-of-home placement.

While the youth in the persistent involvement trajectory fell largely in the deeply involved class, those in the late childhood onset trajectory were represented in all of the four classes but were overrepresented in the limited involvement class. Also overrepresented in the limited class were those in the middle childhood onset trajectory. This suggests that for at least some of the youth with later child welfare involvement, there is a more direct link with their juvenile justice involvement. This pattern seems to be two different systems responding to an underlying issue. In some instances this might be a very direct link; a youth with high levels of absenteeism might be reported for truancy while their parents are investigated for educational neglect. While experiencing educational neglect marks the limited involvement group, not all of the youth are solely truant or status offenders. Approximately half of this group is charged with a delinquent offense; these cases might be instances where the initial responses from either the juvenile justice or child welfare systems were not sufficient to divert youth from escalating in their externalizing behavior.

Impacts of Gender and Race

While males are more likely to have contact with the juvenile justice system, there is literature that suggests that females who commit delinquent acts are different from their male counterparts. To allow for the uniqueness of female delinquency, Ryan and Testa included gender interactions in their logistic regression models. When they found significant interactions of gender with race and type of maltreatment, they ran the models separately for gender. Once interactions are found, the meaning of the individual variables in the equation changes and interpretations become more complex. Running separate models allows for looking at the unique relationships the variables have with gender; however, once gender is no longer included in the equation, it becomes impossible to make direct comparisons between males and females. The same interactions were tested for in the current study's models, but the number of significant ones was so few that it did not justify running separate models.

The gender interactions that were significant in our study do allow for comparisons between the genders and the findings suggest that certain factors of the child welfare experience have differential impact based on gender. Older age at first maltreatment allegation was a significant predictor of crossing over for both genders in the logistic regression results, but it was stronger for females. Related, females were disproportionately represented in Trajectory Class 1 where maltreatment started in late childhood and escalated; fifty-four percent of the class was female compared to a relatively even gender split in the sample. There are many potential reasons for this finding and the current study does not provide clear answers. It might be that there are underlying maltreatment risks that are more likely to go undetected until late childhood or early adolescence for females. It might also be the case that troubles in the child's relationship with the family during adolescence are either more likely to be reported to child welfare when the child is female.

Gender interactions were also found with substance abuse and having a history of unsubstantiated allegations in the logistic regression model. In the case of substance abuse in the home, males seemed to be less affected by this than females in terms of crossing over. Again, the reasons for this are unclear. It might be the case that females are generally more affected by substance abuse in the home. However, it might also be a finding unique to crossing over; perhaps substance use is a more common pathway into crossing over for females as opposed to males. Alternatively, having a history of unsubstantiated maltreatment allegations had a stronger effect for males than females. Whether the effect is driven by maltreatment that was present but not detected or just a greater level of contact with the system, it is unclear why males would experience this more strongly than females in terms of crossing over. In puzzling over all of these gender interactions, it is important to be clear that the only outcome examined in this study is formal juvenile justice involvement. Many of these variables might increase the risk of other externalizing or internalizing behaviors that are not observed in the study. From this view, it might not be the case that males or females are less affected by these factors, but that they may differ in how they experience them. For example, a history of unsubstantiated allegations representing unaddressed maltreatment might result in significant internalizing problems for females; this effect would be missed in the current study, which focuses only on juvenile justice involvement.

The current study did not find an interaction between gender and race. This is in contrast to Ryan and Testa's findings. While they found the likelihood of crossing over was increased for African Americans compared of both genders (compared to White youth), being identified as Hispanic only increased the likelihood of crossing over for males. In the current study's sample, Hispanic males and Hispanic females experienced similar increases in the likelihood of crossing

over. While it is difficult to say precisely why this difference exists, it is informative to note the differences in the racial make up of the samples. The Ryan and Testa sample was predominantly African American (69%); White (19%) and Hispanic (13%) youth made up the rest of the sample and youth that did not fit into these three categories were excluded. In contrast, African American or Black youth make up 25% of the current study sample. White youth were the largest group (44%), Hispanic youth represented a sizeable majority (20%), and the roughly 11% of youth that did not fit into these three categories were retained for analyses.

While African American youth are overrepresented in both samples of child welfare involved youth, it is striking that African American youth actually make up the majority of youth in the Ryan and Testa sample. While it is beyond the scope of this paper to explore the reasons for disproportionate rates of disproportionate minority contact in the two child welfare systems, it should be noted that the samples vary both in time and location. Ryan and Testa followed youth born in 1983 and 1984; the current sample follows youth born in 1996, twelve to thirteen years later. Ryan and Testa used a sample from Cook County, Illinois, an urban and densely populated jurisdiction that includes the city of Chicago; this is a very different context than the entire state of Connecticut, which consists of urban, suburban, and rural areas.

In logistic regression, categorical variables with multiple levels are compared to a reference group. In both studies, the reference group was White youth. In the current sample, White youth were both from the racial majority group and the largest represented group. In the Ryan and Testa study, African American youth were actually a numerical majority. As systems become increasingly aware of and concerned about disproportionate minority contact, it is important that the context and potentially complex interactions with race and other factors (e.g., gender) are taken into consideration.

Limitations

One of the primary limitations of the study is that it uses administrative data. Despite the many benefits of using administrative data, there are three primary drawbacks. The first is that it represents only a subset of maltreatment and delinquency cases. There are youth who likely have similar experience but never come to the attention of formal systems. The experiences of these youth are no less important, but they are much harder to obtain. Related to this point, it is difficult to disentangle the experience of maltreatment from the impact of increased contact with systems. While the role of the child welfare system is to intervene and protect child victims, it is difficult to quantify the disruptive effect receiving services might have on youth and the degree to which that impacts youth above and beyond the maltreatment experience. The final drawback to using administrative data is all of the information that is left out of official records. Nothing in the current data set addressed school performance or academic achievement; given that adolescents are supposed to spend a large amount of their time in formal school, this omission is frustrating when trying to understand their experiences. While risk assessments were used to get broad measures of domestic violence and substance abuse, even these indicators were crude and limited. There was no routine information on parental history of childhood maltreatment, housing or other environmental barriers faced by the family, or social, emotional, or developmental issues facing the youth.

Further, the scope of this study is limited to child welfare-involved youth who go on to have contact with the juvenile justice system. As discussed previously, crossing over is not the only negative outcome with which researchers, policy makers, and practitioners are concerned. The discussion in this study of the different pathways youth take after a maltreatment experience has purposely stayed away from resilience; while there are certainly youth who emerge from

these experiences with a high level of functioning, this study is not able to detect these youth. The absence of a negative experience, in this case juvenile justice involvement, is not in and of itself a positive outcome. Future studies could build on this work by addressing what happens to non-crossovers, but the current study is only able to examine the outcomes of those with juvenile justice involvement.

Despite these limitations, this study contributes to growing literature on COY. Given the inherent difficulties in matching data across systems, there is value in simply identifying and describing COY. While previous studies have followed a cohort (Ryan & Testa, 2005; Stewart et al., 2008), this study did so with a sample from a different time period and location. In addition, this study moved beyond predicting which youth would cross over and instead explored the different levels of child welfare and juvenile justice involvement that characterized those who did become involved in both systems.

Implications and Recommendations

The results of the current study have implications for policy, practice, and future research. These three categories are discussed separately below. However, these three areas are tied to one another and continued progress in understanding a serving COY relies on the collaboration between policy makers, staff from these service systems, and researchers.

The current study documents an overlap of 18% of youth involved in both the child welfare and juvenile justice systems. While anecdotally this overlap was known, it took significant efforts on the part of the child welfare and juvenile justice systems to coordinate this data sharing effort and determine this figure. This is reflective of a history of policy and practice that largely keeps these systems separate. Policy makers can advocate for initiative that “de-silo” these systems and encourage collaboration and coordination. These efforts not only benefit

individuals by providing more comprehensive and less fragmented services, but there are also potential cost savings by systems working together. As the results of this study show, there is a small but identifiable group of youth who are deeply involved in the child welfare and juvenile justice systems. This deep involvement is concerning for individual outcomes but it also represents a significant expenditure of time, resources, and money on the part of the service systems. If systems were better able to identify a youth's needs and coordinate with each other to address those needs, there is an opportunity to simultaneously improve individual outcomes and realize cost savings.

While better coordination across systems happens at different levels and in many ways, one clear step policy makers can take is to facilitate data sharing across systems. Data sharing needs are also not limited to the child welfare and juvenile justice systems. While this is an important first step, educational, vocational, housing and data from other systems is needed to fully understand the situations of these youth. Before planning of better services can occur, there needs to be a way of routinely identifying youth served in multiple systems. Even this current effort in data sharing, as significant and important a step as it is, is still limited to a retrospective look. Routine data sharing would ensure research studies are easier to conduct and that practitioners have this information readily available.

The results of this study also have implications for practice. There is a clear pattern of factors that cluster together to predict which youth are going to cross over. The trajectory analysis identified a relatively small group of youth who are persistently involved and who are most likely to cross over. Intervention efforts for these youth are likely to differ from youth on other trajectories. These youth can be identified relatively early on; they are most likely involved in infancy, but unlike the infancy-limited trajectory youth their involvement persists. Increased

efforts at specific interventions in infancy might divert some youth off the persistent course. However, for the youth that continue on the persistent trajectory it is important for practitioners to know that they are at an increased risk of crossing over and for the child welfare system to target prevention efforts. Additionally, the fact that youth who have late childhood onset maltreatment cross over at high rates suggests that there is a need for improving the adolescent services offered. It might be the case that the resources available to child welfare workers are more targeted to and effective for younger children and they are relatively un-equipped to handle older youth and adolescents. While delinquency diversion is likely outside the scope of current child welfare practices, increased connections to other programs and resources can be made if the child welfare system sees value in preventing negative outcomes.

For juvenile justice practitioners, the focus is likely on intervening early. Ideally, at the first point of crossing over, a youth can be identified. The results show that there is a constellation of risk factors that can be identified relatively early on that might inform practice. The Deeply Involved youth from Study 2 can be distinguished from the other groups; while the child welfare histories of the other groups should not be ignored, the pattern of ongoing and co-occurring maltreatment can signal that this is a group that needs more intensive interventions. Another group that might require a different form of treatment in the juvenile justice system is the Mixed Involvement youth. These youth have a child welfare history that is rather distinct from the typical experiences; there are very different types of allegations and the involvement is largely limited to one experience. However, this single time involvement does not necessarily mean that the problems are less severe. Given the pattern of allegations in this group and the high rates of reported domestic violence, it is possible these are families with significant needs. While these needs might have brought them to the attention of the child welfare system, that system

might not have been the most appropriate intervention. Because there is a focus on bringing in families early on in the juvenile justice involvement, practitioners might want to consider these youth the most important to engage with on a family level.

Finally, there are great opportunities for future research. If data sharing agreements are made, it would be significant to incorporate educational, vocational, housing, adult criminal justice, and other service system data. Additionally, the current data set includes information on juvenile justice-involved youth with no documented history of neglect. Future studies can compare COY to other juvenile justice-involved youth at key decision points in the court process to see if there is bias in how COY are processed.

Conclusion

Despite a body of research linking child maltreatment and delinquency, few studies have been able to document a group of youths' full involvement in child welfare agencies across time and link it to concrete outcomes in the juvenile justice system. This has meant that while child maltreatment is a known risk factor for delinquency, the actual developmental experiences of maltreated youth, both within their families and then within DCF, that then lead to them becoming delinquents as well are not well understood. Nearly all of the research on the link between maltreatment and delinquency has been variable-oriented. While this approach is helpful in building up the knowledge base on particular phenomena, the person-centered approaches taken in this study extend the finding to better account for inter-individual differences. The latent class growth analyses of timing presented here are more in-line with a pathways approach that is emphasized in developmental psychopathology literature. Further, the questions of within group differences in Study 2 move the literature beyond just identifying crossovers and treating them as one homogenous group to instead understanding the

different subgroups that make up this population. Even among youth who have experience in both systems, there are likely differences in the severity of involvement in either system with some youth being comparatively more risky than others.

The study serves as an example of translational scholarship in the sense that these analyses make not only a contribution to the academic literature on the topic, but have the potential to inform best practices and policy, as well. Understanding the patterns and factors in the child welfare system that lead to crossing over presents an opportunity to shape interventions with the goal of ultimately preventing crossing over. Further, an understanding of the different types or subgroups of those that crossover can help inform juvenile justice practitioners at the point of first contact, perhaps reducing recidivism or further involvement in the system. Finally, policy makers can use the findings to encourage greater sharing of data and information across systems to better serve the youth and, perhaps, reduce the costs associated with the management of these complex cases within both systems.

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