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THE CAREGIVER–CHILD RELATIONSHIP, YOUTH MENTAL HEALTH,
AND PLACEMENT STABILITY IN A CHILD WELFARE SAMPLE

A Dissertation

Presented to

The Faculty of Social Sciences

University of Denver

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Laura A. Rindlaub

August 2015

Advisor: Omar G. Gudino, Ph.D., A.B.P.P.

Author: Laura A. Rindlaub

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Abstract

Objective: Healthy relationships between adolescents and their caregivers have been robustly associated with better youth outcomes in a variety of domains. Youth in contact with the child welfare system are at higher risk for worse outcomes including mental health problems and home placement instability. A growing body of literature points to youth mental health problems as both a predictor and a consequence of home placement instability in this population; the present study aimed to expand our understanding of these phenomena by examining the interplay among the caregiver-child relationship, youth mental health symptoms, and placement change over time. **Method:** The sample consisted of 1,179 youths aged 11-16, from the National Survey of Child and Adolescent Well-Being, a nationally representative sample of children in contact with the child welfare system. We used bivariate correlations and autoregressive cross-lagged path analysis to examine how youths' reports of their externalizing and internalizing symptoms, their relationship with their caregivers, and placement changes reciprocally influenced one another over three time points. **Results:** In the overall models, early internalizing symptoms significantly negatively predicted the quality of the caregiver-child relationship at the next time point, and early externalizing symptoms predicted subsequent placement change. In addition, later externalizing symptoms negatively predicted subsequent reports of relationship quality, and later placement changes predicted subsequent externalizing problems; these relationships were significant only at

the trend level ($p < .10$). The quality of the relationship was significantly negatively correlated with externalizing and internalizing problems at all time points, and all variables demonstrated autoregressive stability over time. **Conclusions:** Our findings support the importance of comprehensive interventions for youth in contact with the child welfare system, which target not only youth symptoms in isolation, but also the caregiver-child relationship, as a way to improve social-emotional outcomes in this high-risk population.

Table of Contents

Chapter One: Introduction.....	1
Overview.....	1
Aims.....	3
The Caregiver-Child Relationship and Youth Mental Health.....	4
The Caregiver-Child Relationship and Youth Mental Health in Child Welfare.....	8
Placement Stability, the Caregiver-Child Relationship, and Youth Mental Health.....	12
Summary.....	15
Chapter Two: Method.....	17
The National Survey of Child and Adolescent Well-Being (NSCAW).....	17
Participants.....	18
Measures.....	18
Analyses.....	21
Chapter Three: Results.....	23
Aim 1.....	25
Aim 2.....	27
Aim 3.....	29
Aim 4.....	30
Chapter Four: Discussion.....	32
Limitations and Future Directions.....	38
Conclusion.....	40
References.....	41
Appendices.....	49
Appendix A: Tables.....	49
Table 1.....	49
Table 2.....	50
Table 3.....	51
Table 4.....	52
Table 5.....	53
Table 6.....	53
Table 7.....	54
Table 8.....	54
Table 9.....	55
Table 10.....	55
Table 11.....	56
Table 12.....	56
Appendix B: Figures.....	57

Figure 1.....	57
Figure 2.....	58
Figure 3.....	59
Figure 4.....	60

Chapter One: Introduction

Overview

Youth in contact with the child welfare system are at increased risk for suboptimal outcomes in a variety of areas. One important influence on these youths' well-being is their relationships with their caregivers, as the caregiver-child relationship (CCR) can increase or decrease risk for such outcomes. In the general population, warm, supportive caregiving is associated with positive adolescent outcomes in the areas of mental health, physical health, academic achievement, emotion regulation, social skills, and relationship success (Ainsworth, Blehar, Waters, & Wall, 1978; Baumrind, 1971; Branstetter & Furman, 2013; Longmore, Manning, & Giordano, 2013); conversely, caregiving that is characterized as harsh, punitive, or neglectful exerts deleterious effects on children's well-being in all these areas (Conger, Patterson, & Ge, 1995; Tilton-Weaver et al., 2010). At the extreme end, the experience of child abuse or neglect is associated with such problems as posttraumatic stress disorder (PTSD), depression, anxiety, and conduct problems (Cicchetti & Toth, 1995). At the same time, while the quality of caregiving itself is of great importance, children's own mental health issues – both externalizing and internalizing problems – can also affect the quality of the CCR (Boutelle, Eisenberg, Gregory, & Neumark-Sztainer, 2009; Buist, Dekovic, Meeus, & van Aken, 2004; Patterson, DeBaryshe, & Ramsey, 1989). Although these two processes – the influence of the CCR on youth mental health, and the influence of youth mental

health symptoms on the CCR – have been examined separately, less research has focused on the ways that the two processes interact with one another over time. Thus, the present study aims to examine the reciprocal relationship between the CCR and child MH symptoms both cross-sectionally and over time in the first national, longitudinal probability study of children in contact with the child welfare system, the National Survey of Child and Adolescent Well-Being (NSCAW). The inclusion of internalizing symptoms, in particular, is an important contribution of the current study, as relatively little research has examined the effects of internalizing problems on the CCR.

Home placement instability is another risk factor for problems in youths' well-being (Newton, Litrownik, & Landsverk, 2000; Ryan & Testa, 2005). It is well established that adolescent behavior problems can increase placement instability for youths in out-of-home (OOH) care; research also indicates that frequent placement changes can lead to youth mental health problems among previously healthy children. Less well understood, however, is the role of the CCR in youths' ability to remain in one placement over time. Given the robust research base indicating that the CCR is important to youth mental health, and that youth mental health is a factor in placement instability, it is important to understand how the CCR fits into the picture of youth mental health and placement change over time. Thus, the present study aims to contribute to existing research, by examining how the CCR, youth mental health, and home placement change predict one another over time. These patterns could have important implications for interventions aimed at youth in contact with the child welfare system, to increase the likelihood of positive outcomes.

Aims

1. To examine cross-sectional associations between youth's relationship with caregivers and youth mental health separately across internalizing and externalizing problems.
 - Hypothesis 1a: Caregiver relationship quality will be negatively correlated with externalizing problems.
 - Hypothesis 1b: Caregiver relationship quality will be negatively correlated with internalizing problems.
2. To examine the longitudinal and bidirectional associations between the CCR and mental health symptoms over time.
 - Hypothesis 2a: Externalizing symptoms at one time point will be negatively associated with the CCR in the subsequent time point.
 - Hypothesis 2b: The CCR at one wave will have a negative main effect on externalizing problems at future waves, after accounting for stability in externalizing problems.
 - Hypothesis 2c: Internalizing symptoms at one time point will be negatively associated with the CCR in the subsequent time point.
 - Hypothesis 2d: The CCR at one wave will have a negative main effect on internalizing problems at future waves, after accounting for stability in internalizing problems.
3. To examine the bidirectional relationships between mental health symptoms and placement change over time.

- Hypothesis 3a: Externalizing symptoms at one wave will predict subsequent placement changes.
 - Hypothesis 3b: Placement changes at one time point will predict subsequent externalizing symptoms.
 - Hypothesis 3c: Internalizing symptoms at one wave will predict subsequent placement changes.
 - Hypothesis 3d: Placement changes at one time point will predict subsequent internalizing symptoms.
4. To examine bidirectional relationships between the CCR and placement changes over time.
- Hypothesis 4a: A higher-quality CCR at one wave will negatively predict subsequent placement changes.
 - Hypothesis 4b: Placement changes at one wave will negatively predict the CCR at subsequent waves.

The Caregiver-Child Relationship and Youth Mental Health

Warm, supportive relationships between a child and his or her caregiver have been robustly associated with positive social, emotional, academic, and physical development in both children and adolescents (Ainsworth & Bowlby, 1991; Boutelle et al., 2009; DeKlyen & Greenberg, 2008; Waters, Merrick, Treboux, Crowell, & Albersheim, 2003; Weinfield, Sroufe, & Egeland, 2000). Adolescence is distinct from childhood in that it is a period of notable transition and change, as individuals contend with significant development and growth in the physical, cognitive, and relational domains. Caregivers and adolescents face unique challenges as they attempt to navigate

these changes together: caregivers must maintain open communication with teens, provide support, and monitor their teens' behavior, while youth must negotiate issues of peer pressure, identity exploration, and dating, among other concerns (Longmore et al., 2013). How these competing demands are managed in the caregiver-child relationship is crucial, as the teen years have been shown to be a launching point for later developmental stages (Oesterle, Hawkins, Hill, & Bailey, 2010). Given the unique constellation of pressures that emerge in the CCR during adolescence, and the importance of the relationship quality for youth wellbeing, research has sought to identify aspects of the relationship that confer risk or protection to the adolescent.

Adolescents' neural circuitry naturally predisposes them to engage in novelty- and sensation-seeking (which increase sharply with puberty), but without the "brakes" of a mature self-regulatory system (Steinberg, 2007); thus, they typically engage in higher-risk behaviors as they negotiate the many changes occurring in themselves and in their environments. Potentially problematic adolescent behaviors can include sexual activity, substance use, truancy, and/or violence. Given the risky nature of this developmental stage, the need for both control and support from parental figures is well established. The *social control* theory of parenting posits that caregivers are best able to curb their teens' behavior through a combination of warmth and control (Longmore et al., 2013). Parental behaviors that demonstrate warmth and caring serve to activate attachment bonds and show teens that they matter to caregivers (Elliott, 2009). Such a foundation of warmth and support facilitates control of behavior, both directly through self-disclosure by teens and monitoring by parents, and indirectly as teens internalize parental values (Barnes,

Hoffman, Welte, Farrell, & Dintcheff, 2006; Branstetter & Furman, 2013; Hayes, Hudson, & Matthews, 2007; Sieverding, Adler, Witt, & Ellen, 2005).

Caregiver-adolescent relationships characterized by both warmth and control, therefore, have been linked to lower engagement in a variety of high-risk and externalizing behaviors, such as substance use, early sexual debut, and school truancy (Greene, Krcmar, Walters, Rubin, & Hale, 2000; Meadows, 2007). However, the caregiver-child relationship does not only serve to curb youths' dangerous behavior; it is also crucial for teens' self-esteem and can protect them from many of the internalizing problems that arise during adolescence. Warmth and support from caregivers are associated with lower rates of internalizing problems such as depression, anxiety, and posttraumatic stress disorder (Charuvastra & Cloitre, 2008; Gecas & Longmore, 2003; Gil-Rivas, Greenberger, Chen, & López-Lena, 2003; Kouros & Garber, 2014; Meadows, 2007; Piña-Watson & Castillo, 2015). Modern attachment theory argues that not only infants, but also adolescents and even adults depend on a "secure base" figure (either a caregiver or a partner) to whom they can turn for comfort, support, and guidance, equipping the individual to face stressors more effectively (Greenberg & Johnson, 1988; Johnson, 2008). Overall, the link from a positive CCR to better mental health in adolescents has been robustly established in the literature.

This relationship between the CCR and youth mental health is typically bidirectional, since youths' psychological wellbeing can exert an effect on the CCR, as well. Research demonstrates clearly that youth externalizing problems such as oppositionality, aggression, impulsivity, and delinquency make the job of parenting more difficult, and can put considerable strain on the relationship between caregiver and child

(Campbell, Pierce, Moore, & Marakovitz, 1996; Costa, Weems, Pellerin, & Dalton, 2006; Markel & Wiener, 2014; Patterson et al., 1989; Theule, Wiener, Tannock, & Jenkins, 2013). Patterson's *coercion theory* posits that angry, hostile interactions between parent and child tend to self-perpetuate and escalate over time (Granic & Patterson, 2006). Hostility and coercion from parents have been shown to exacerbate emotional and conduct problems in youth, and to hinder their development of social, cognitive, and emotional competency (Conger, Ge, Elder, & Lorenz, 1994; Conger & Conger, 2002; Gotlib & Goodman, 1999; Wall & Barth, 2005). Even when a parent chooses to withdraw from conflict, this can create a vacuum for increased delinquent behaviors on the teen's part (Granic & Patterson, 2006).

In addition, recent research has demonstrated that not only externalizing symptoms, but also internalizing problems such as depression or anxiety, can negatively impact adolescents' relationships with their caregivers. Buist and colleagues (2004) interviewed 288 Dutch adolescents, age 11-15, regarding their attachment (i.e., trust, communication, and connectedness) to parents, as well as their internalizing and externalizing symptoms, over three time points. They found that in addition to the established effects of lower-quality CCR negatively impacting youths' symptoms, a reciprocal effect was also evinced: adolescents' internalizing *and* externalizing symptoms negatively predicted their views of the CCR one year later. Similarly, in their sample of over 2,500 middle and high school students in the Midwest, Boutelle and colleagues (2009) found that adolescent depressive symptoms, low self-esteem, and low body satisfaction predicted decreased parent-child connectedness over time. Boutelle and colleagues point out that internalizing problems such as depression and low self-esteem

may impact the CCR by causing adolescents to be more irritable and sad, and to withdraw more from family interactions. In addition, Buist and colleagues (2004) posited that an anxious, depressed adolescent “may not view the relationships with his or her parents as very positive” (p. 253). Thus, though less extensively examined, there is evidence that internalizing as well as externalizing symptoms in youth can put strain on the CCR, potentially also resulting in a negative cycle over time.

Because of higher rates of external factors such as poverty, neglect, and exposure to trauma, the population of youth in contact with the child welfare system is at high risk for both internalizing and externalizing problems. Both types of symptoms have been demonstrated to affect the CCR, and the CCR can, itself, impact both types of problems. While much of the existing research on the CCR and youth mental health has focused upon externalizing problems, it is crucial to consider the unique effects of mental health problem type when considering the complex interactions between mental health symptoms and the CCR for youth in the child welfare system.

The Caregiver-Child Relationship and Youth Mental Health in Child Welfare

The complex relationship between the CCR and youth mental health becomes still more complicated for youth who have had contact with the child welfare system. Youth in contact with the child welfare system are unusually susceptible to mental health problems, as the experience of child maltreatment has been firmly established as a nonspecific risk factor for a variety of problematic child outcomes. Consequences of abuse include difficulties with affect regulation, peer relationships, and academic performance, as well as symptoms of psychopathology including depression, anxiety, PTSD, delinquency, oppositional defiant disorder, conduct disorder, and personality

disorders (Cicchetti & Toth, 1995; Kim-Spoon, Cicchetti, & Rogosch, 2013; Webb, 2006). Among the cohort of children studied in the National Survey of Child and Adolescent Well-Being (NSCAW), problems have been noted with posttraumatic stress symptoms, depression, anxiety, suicidal behaviors, substance use/abuse, teen pregnancy, and delinquent behaviors (Grogan-Kaylor, Ruffolo, Ortega, & Clarke, 2008; Kolko et al., 2010; Leslie et al., 2005; Leslie et al., 2010; Mustillo, Dorsey, Conover, & Burns, 2011; Wall & Barth, 2005). Leslie and colleagues (2005) identified 87% of the NSCAW sample as having a physical, developmental, or mental health need of some kind. In later analyses, Leslie and colleagues (2010) determined that over 45% of children age 11-14 in the sample were engaged in at least one health-risk behavior at the time of enrollment, including depression (13%), suicidality (8%), cigarette use (20%), alcohol use (16%), and marijuana use (8%). A study conducted with a second nationally representative sample of children in contact the child welfare system (NSCAW II) found that 43% of youth age 12-18 had at least one mental health problem, such as depression, anxiety, and ADHD (Heneghan et al., 2013). In sum, youth involved in the child welfare system show elevated rates of a variety of mental health-related difficulties, indicating that they comprise a distinctively high-risk population.

Providing care for youth with such adverse experiences can be fraught with difficulties even when caregivers are the biological parents; providing foster care for youth in out-of-home placements is still more challenging (Geiger, Hayes, & Lietz, 2014). In addition to the higher rates of youth mental health problems that foster caregivers must manage, both teens and caregivers may bring expectations into the relationship based on prior experiences. Attachment theory, for example, states that

children's early experiences lead to "internal working models" of close relationships, which in turn shape expectations and perceptions of subsequent relationships (Bretherton & Munholland, 2008). For children whose prior relationship history was characterized by unreliable or abusive parenting, their internal working models may lead them to expect similar parenting from new caregivers, and translate to difficulty trusting or relating to these caregivers (Dozier & Rutter, 2008). Since positive relational interactions depend upon opportunities for caregivers to provide warmth and support in times of distress, children who deny caregivers the chance to provide such caregiving may unwittingly short-circuit the relationship formation process. Caregivers, too, can bring expectations to a foster relationship that may be unrealistic, such as expectations regarding the youth's behavior, and integration or lack thereof into the family. They may be unprepared for older foster youth with developmentally typical adolescent behaviors, or those whose personalities do not "fit" easily into the family (Barth et al., 2007; James, 2004; Storer, Barkan, Sherman, Haggerty, & Mattos, 2012). Such mismatch between caregivers' or youths' expectations and the reality of the relationship can result in increased strain in the CCR.

On the other hand, there is also evidence that warm, supportive foster caregiving can play an important role in protecting children from the pernicious psychosocial effects of abuse and neglect, or in remediating such problems if they have already begun (Crum, 2010; Dozier & Lindhiem, 2006; Turner & Macdonald, 2011). Schofield and Beek (2009) have shown that when foster families can provide sensitivity, acceptance, cooperation, availability, and a sense of membership within the family, this is associated with increased levels of felt security and support on the part of the foster youth; this, in

turn, leads to greater youth resilience over time. Storer and colleagues (2014) point to a sense of “belonging” as an important predictor of adolescents’ satisfaction with out-of-home placement, since foster youth desire that caregivers show genuine interest in their lives, combined with parental structure and guidance.

Taken together, it is clear that a) youth in contact with the child welfare system comprise a uniquely high-risk group for emotional and behavioral problems, and b) the caregiver-child relationship – whether with biological or foster caregivers – both influences and is influenced by youth mental health problems. What is less clear is how, exactly, these two variables interact with one another over time in this high-risk population, especially with regards to youth internalizing symptoms. A large body of literature has established the relationship between youth externalizing problems, in particular, and lower-quality CCR; the research on the effect of youth *internalizing* symptoms on the CCR is far more sparse, especially in the child welfare population (cf. Lawrence, Carlson, & Egeland, 2006). The present study, therefore, utilizes a nationally representative longitudinal sample of young adolescents in contact with the child welfare system to examine the relationship between the CCR and youth externalizing and internalizing problems, both cross-sectionally (**Aim 1**), and over time (**Aim 2**). It is hypothesized that caregiver-youth relationship quality will be negatively associated with both externalizing and internalizing problems cross-sectionally (*Hypotheses 1a* and *1b*). Over time, we predict that externalizing symptoms at one time point will be negatively associated with the CCR quality at the subsequent time point (*Hypothesis 2a*), and that the reverse will also be true: the CCR at one wave will exert a negative main effect on externalizing problems at future waves, after accounting for stability in externalizing

problems (*Hypothesis 2b*). We hypothesize similar reciprocal patterns for internalizing problems and the CCR (*Hypotheses 2c and 2d*). To our knowledge, this study will be unique in specifically examining internalizing problems and the CCR in a child welfare sample, as existing research has typically focused on externalizing problems within this population. In addition, to our knowledge, most of the existing literature has focused on concurrent reports of youth symptoms and the CCR, rather than utilize a longitudinal design that would enable examination of directionality. Using measures of these constructs at three time points is therefore another important contribution of the current study.

Placement Stability, the Caregiver-Child Relationship, and Youth Mental Health

When considering youth in the child welfare system, it is crucial to address the issue of out-of-home (OOH) placements, and the stability of those placements over time. While the majority of children with a child welfare investigation open are not removed from their homes, a great many do experience removal to foster or kinship care. Those who are placed out of home must contend with the stress of navigating a new living environment, sometimes with unfamiliar caregivers. This stress is exacerbated when youth must change their OOH placement multiple times (Newton et al., 2000); adolescents in foster care encounter a median of four placement changes during their first 18 months (McKellar, 2007). Research has consistently shown that foster children with externalizing problems are at higher risk of frequent placement changes (Aarons et al., 2010; E. M. Z. Farmer, Mustillo, Burns, & Holden, 2008; O'Neill, Risley-Curtiss, Ayón, & Williams, 2012); youth behaviors such as lying, stealing, substance use, and aggression toward other children in the home can overwhelm foster caregivers, leading them to

request removal of the youth from their care (Crum, 2009; Storer, 2014). Over time, externalizing problems and frequent placement changes can mutually reinforce one another, eventually leading to placement in more restrictive settings for youth, such as residential treatment or even juvenile detention (Aarons et al., 2010; Farmer et al., 2008).

However, recent research has also determined that placement changes – for reasons other than the child’s behavior – confer their own risk to foster children’s well-being. In their landmark study, Newton and colleagues (2000) explored the relationships among baseline child mental health symptoms, subsequent placement change, and symptoms at follow-up among a sample of children who were in foster care for at least 5 months. They found that children who were free of internalizing symptoms at baseline, but who then experienced frequent placement disruptions, were more likely to have developed clinically significant levels of internalizing symptoms at follow-up. This led them to conclude that asymptomatic children may in fact constitute “a neglected population that responds to multiple disruptions of their primary relationships with increasingly self-defeating behaviors” (p. 1363); they argued for analytic approaches that view behavior problems as both a cause and a consequence of placement changes. In the NSCAW sample, Aarons and colleagues (2010) also found that children’s internalizing and externalizing problems were influenced over time by placement instability, and Kolko et al. (2010) found that placement in OOH care positively predicted posttraumatic stress symptoms. Taken together, this research indicates that placement instability contributes to an increased mental health burden for this population.

Attachment researchers argue that consistency in caregiving is crucial to children’s survival and adjustment (Dozier & Rutter, 2008); in fact, Dozier and Lindhiem

(2006) suggest that having a committed caregiver is even more important to children's sense of security than the caregiver's behavioral responsiveness. Irrespective of attachment relationships, it is clear that not having a permanent home exacerbates the normal challenges of adolescence (Capps, 2012); Ryan and Testa (2005) found that male adolescents who experienced multiple placement changes were more than twice as likely to have delinquency petitions filed than their counterparts who remained at home or had only one placement change. Therefore, **Aim 3** of the present study is to examine the bidirectional relationships between mental health symptoms and placement change over time. Based on existing research, we hypothesize that externalizing symptoms at one wave will predict subsequent placement changes (*Hypothesis 3a*), and vice versa (*Hypothesis 3b*). There has been very little research to date examining whether youth internalizing symptoms predict subsequent placement changes (for one exception, see Aarons et al., 2010). It is conceivable that youth who are depressed, anxious, or withdrawn could be perceived negatively by caregivers, perhaps leading to increased risk for placement change. Thus, we hypothesize that internalizing symptoms at one wave will predict subsequent placement changes (*Hypothesis 3c*); based on a firm foundation of existing research, we hypothesize, as well, that placement changes at one time point will predict internalizing symptoms later on (*Hypothesis 3d*).

Where does the relationship between adolescent and caregiver fit into this link between placement instability and youth mental health symptoms? Given the importance of the CCR in adolescence generally, it seems to follow logically that youth in OOH care who are able to form strong relationships with caregivers would experience fewer placement changes; however, very little research has examined this question. Leathers

(2006), for example, found that a foster child's "integration" into the foster home (defined as (1) the child's perception of belonging in the foster home and (2) the child's probable reaction to being removed from the home) mediated the relationship between child behavior problems and risk of placement change. This led her to conclude that "a youth's ability to form relationships with an unrelated foster family is a key factor in determining placement outcome" (p. 319). Aarons and colleagues (2010) utilized the NSCAW sample to examine the reciprocal relationship of child internalizing/externalizing symptoms and placement instability over time, but did not include youths' relationships with caregivers in their model.

The present study aims to address the question of how the CCR fits into the relationship between youth mental health problems and placement instability, by exploring the links between placement stability and youths' perceptions of the CCR over time (**Aim 4**). We hypothesize that a higher-quality CCR at one wave will negatively predict subsequent placement changes (*Hypothesis 4a*), and that placement changes at one wave will negatively predict the CCR at subsequent waves (*Hypothesis 4b*).

Summary

In summary, the CCR is an important factor contributing to children's mental health and social-emotional development, and has been implicated in a wide variety of adolescent outcomes, from delinquent behavior to anxiety and depression. It is clear that adolescents' perceptions of caregivers as warm, supportive, and trustworthy leads to better adjustment over time, including in the face of environmental stressors. In addition, there is evidence that youths' own externalizing and internalizing symptomatology can impact their relationships with caregivers, such as through a coercive family process or

through withdrawal from the relationship, respectively. These processes are even more complicated for youth in the child welfare system, who are at higher risk for mental health problems, as well as for having experienced abuse, neglect, and other significant family stressors that could impact youths' perceptions of caregivers. Therefore, this study aims to investigate the interplay between youths' perceptions of the CCR and their internalizing and externalizing MH symptoms, both cross-sectionally and over time, in a high-risk sample of youths involved in the child welfare system. It is hypothesized that a positive CCR will be negatively associated with externalizing and internalizing symptoms, and that conversely, higher levels of symptoms will predict lower quality of the CCR. This study makes a novel contribution to existing literature by examining the unique contribution of internalizing symptoms to problems in the CCR in a child welfare sample.

This study also aims to explore how the CCR fits into the well-established relationship between youth mental health problems and placement instability. We expect to corroborate existing evidence that placement instability and youth mental health symptoms reciprocally influence one another; in addition, we hypothesize that higher-quality relationships with caregivers will negatively predict placement change, and that placement change will negatively predict the CCR. Findings could have important implications for avenues of intervention to increase social-emotional resilience in this population.

Chapter Two: Method

The National Survey of Child and Adolescent Well-Being (NSCAW)

The National Survey of Child and Adolescent Well-Being (NSCAW) is a nationally representative longitudinal study designed to examine a range of fundamental questions about abused and neglected children and their contact with the child welfare system. The NSCAW cohort consists of 5,504 children between the ages of birth and 16¹ years, who had contact with the child welfare system during a 15-month period beginning in October 1999. These children were selected from 92 primary sampling units (PSUs) within nine strata, representing 97 counties in all 50 states. The nine sampling strata were defined as the eight states with the largest child welfare caseloads, and a ninth stratum consisting of all remaining states plus the District of Columbia. Within the strata, PSUs were generally defined as the geographic area served by a single CPS agency. The PSUs were randomly selected using a probability-proportionate-to-size procedure, giving a higher chance of selection to PSUs having larger caseloads.

Children from the CPS sample were selected as follows: each month during the sampling period (October 1999 through December 2000), sampled agencies submitted lists of all children who were investigated for child maltreatment in the previous month. Those children were divided according to eight mutually exclusive and exhaustive

¹ The NSCAW study was originally designed to sample youth from birth to age 14 at baseline; however, 98 participants were age 15 at baseline, and one participant was age 16.

within-PSU sampling “domains,” which included factors such as receiving services or not, less than 1 year old or age 1-16 years, in-home or out-of-home care, and sexual abuse allegations vs. all other types of maltreatment. Children were then randomly sampled from within these domains, to guarantee adequate power in analyses of children from domains with low base-rates, such as infants and sexual abuse cases. Five waves of data were collected from the cohort, at baseline (Wave 1), 12 months (Wave 2), 18 months (Wave 3), 36 months (Wave 4), and approximately 6-8 years (Wave 5) following the close of the child welfare investigation. See Table 1 for a timeline of data collection, including respondents at each wave. For the purposes of the current study, data from Waves 1, 3, and 4 were used.

Participants

Data were used from a subsample of youth who were 11-16 years old at the time of the investigation. Study participants age 11 and older completed self-report measures about their relationships with current caregivers, as well as measures of their own social and emotional well-being (see *Measures*, below). At Wave 1, a total of 1,179 youth age 11 and older from the CPS sample were assessed.

Measures

Caregiver-Child Relationship. The quality of the caregiver-child relationship was measured in the Child Interview using the Relatedness scale from the Research Assessment Package for Schools – Self-Report Instrument for Middle School Students (RAPS: Connell, 1998). This scale from the RAPS consists of 12 questions assessing youths’ perceptions of their caregivers’ emotional support (sample items include “When I’m with my [caregiver], I feel good”), involvement (e.g., “My [caregiver] does a lot to

help me”), support of the youth’s autonomy (e.g., “My [caregiver] trusts me”), and provision of structure (e.g., “My [caregiver] is fair with me”). Youth were asked to respond to each question using a 4-point Likert scale (1=*not at all true*, 4=*very true*), regarding their relationship with their current caregiver (i.e., biological parent, foster parent, or other primary caregiver). Responses were summed, and internal consistencies were calculated for each of the four subscales, as well as the total score, at each wave. Analyses revealed that across waves, the sum of all items yielded the best internal consistency (Cronbach’s α =.82 at Wave 1, .85 at Wave 3, and .85 at Wave 4); thus, the RAPS Total Score (range 12-48) was used as an indicator of the quality of the CCR.

Youth Mental Health. Youth mental health problems were measured in the Child Interview using the Youth Self-Report (YSR: Achenbach, 1991), a widely-used self-report measure of emotional and behavioral problems. Youth respond to 112 items on a three-point Likert scale (0=*Never true*, 1=*Sometimes true*, 2=*Very often true*); responses can be combined into scales that describe DSM-IV categories or overall internalizing/externalizing problems. Raw scores from the Externalizing Problems and Internalizing Problems scales were used to indicate youth mental health problems in these analyses. The YSR is part of the Achenbach System of Empirically Based Assessment (ASEBA), and consistently demonstrates excellent reliability and validity across a wide variety of populations. In the overall NSCAW sample, internal consistency reliability was good (Cronbach’s α =.90 for externalizing, .90 for internalizing; National Survey of Child and Adolescent Well-Being (NSCAW) Research Group, 2008).

Placement Change. Placement change was calculated using caseworker report data. Caseworkers tracked the dates when children’s living situations changed; this

information, in combination with the dates of data collection for Waves 1, 3, and 4, was used to calculate whether a child's placement change occurred between Waves 1 and 3, or between Waves 3 and 4. The number of placement changes between Waves 1 and 3, and between Waves 3 and 4, were summed to yield variables indicating the number of placement changes occurring between each wave. Importantly, placement change in the present study is operationalized as any change in living situation, including moving from one biological parent's home to the other's; it is therefore distinct from out-of-home care, defined below.

Out-of-Home Care. Out-of-home care was defined as placement in a home environment other than a biological parent's care, such as foster care, kinship care, or residential treatment. Caseworkers reported the total number of OOH placements over the course of the study.

Demographics. Age, gender, and race/ethnicity were obtained from caseworker, caregiver and youth reports. Race/ethnicity was dummy-coded into variables representing four categories: Black, White, Hispanic, and Other.

Maltreatment Type. The alleged type of maltreatment for which the child welfare case had been opened was obtained from the caseworker's responses to a modified version of the Maltreatment Classification Scale (Manly, Cicchetti, & Barnett, 1994) at Wave 1. In cases where multiple types of maltreatment were investigated, caseworkers reported the form of maltreatment they considered the "most serious." For the purposes of this study, alleged maltreatment was dummy-coded into five categories: physical abuse, sexual abuse, emotional abuse, neglect (including physical neglect such as not providing, failing to supervise, and abandonment), or "other" (including

moral/legal maltreatment, educational maltreatment, exploitation, and other unspecified forms of maltreatment).

Analyses

Complex Survey Design. The NSCAW sample differs from simple random samples in important ways. This was a two-stage stratified design, and participants' selection probabilities varied depending on the first stage strata and second stage domains, and were set to achieve specific sample sizes. In addition, selection probabilities differed

“due to more or fewer population members than expected on the frame, inadequate sampling domain population sizes to support the required sample, and restrictions on sampling to facilitate fieldwork” (National Survey of Child and Adolescent Well-Being (NSCAW) Research Group, 2002, p. 24).

For this reason, weights must be used to correct for potential bias due to stratification and unequal sampling, thereby making analyses nationally representative. Individual weights were calculated for each child by the NSCAW Research Group and included in the NSCAW data set, and were used in the present analyses. Analyses were completed using SPSS, Version 22, with the Complex Samples Add-On, as well as with *Mplus*, Version 6 (Muthén & Muthén, 1998-2011) structural equation modeling software.

Analyses. Aim 1 evaluated cross-sectional relationships between youths' report of the CCR quality and their report of their mental health symptoms. This was achieved by examining bivariate correlations between the CCR and externalizing/internalizing symptoms at each time point. The relationship was examined in finer detail by dividing the sample according to whether they were ever in OOH care or not, as well as whether they experienced placement change between Waves 1 and 3 (early placement change) or

between Waves 3 and 4 (later placement change). Fisher's *r*-to-*z* transformations were used to compare the strength of the correlations between these subgroups.

In order to evaluate the relationship between the CCR and youth mental health symptoms over time (**Aim 2**), the data were analyzed using autoregressive cross-lagged models. This approach tests the sequential relations of key variables in the model over time, as well as potential bidirectionality of effects (e.g., the effect of the CCR on subsequent mental health problems, and the effects of mental health symptoms on subsequent reports of the CCR; Selig & Little, 2012). Two models were tested for both externalizing and internalizing. The first model examined the autoregressive cross-lagged effects of the CCR and mental health symptoms (externalizing and internalizing separately) only. The second model incorporated placement change between waves, in order to evaluate **Aims 3** and **4**, namely, the bidirectional effects between placement change and youth mental health, and between placement change and the CCR. Missing data were estimated using full-information maximum likelihood estimation (Muthén & Muthén, 1998-2011). All models controlled for the effects of age and gender. For all models, we report overall model fit indices (Chi-square [χ^2], Comparative Fit Index [CFI], Tucker-Lewis Index [TLI], and Root Mean Square Error of Approximation [RMSEA]), standardized path coefficients, and significance levels.

Chapter Three: Results

Descriptive statistics and demographic characteristics of the sample are presented in Table 2. Means on the outcome variables of interest (CCR, placement change, and externalizing/internalizing symptoms), as a function of child race/ethnicity, maltreatment type, and gender, are presented in Table 3; equality of means among subgroups was tested via two-way analysis of variance, and post-hoc pairwise *t*-tests when indicated. Of the 1,179 youth who were age 11 and older at the time of the first wave of data collection, 687 (58.3%) were female and 492 (41.7%) were male. At Wave 1, participants ranged in age from 11 to 16 years ($M = 12.75$, $SD = 1.28$ years), and the sample was ethnically diverse (see Table 2). Racial/ethnic differences emerged in the means of several outcome variables, including early placement change, externalizing symptoms at Waves 1 and 4, and internalizing symptoms at Wave 3 (see Table 3). Regarding the type of alleged abuse or neglect for which participants' cases had been opened, neglect was the most common allegation, comprising 41.5% of the sample. Belonging to the "other" category of maltreatment type was significantly associated with lower rates of externalizing symptoms at all time points, and with lower rates of internalizing symptoms at Wave 1 (see Table 3).

With regards to home placement over the course of the study, notable variability was present: the majority of children (77.1%) were *not* placed in out-of-home care (i.e., foster or kinship care) at all over the course of the study, though 15.3% of children

experienced at least two out-of-home placements during this time. On average, youths were placed in only 0.75 ($SE = .11$; range = 0-19) out-of-home placements over the course of the study. *Changes* in placement, however, were more common: 47.4% of the sample experienced two or more changes in caregiver environment over the course of 36 months, though these changes were frequently not considered placement into “out-of-home care” (e.g., moving from one parent’s home to the other’s). The sample experienced an average of 2.26 ($SE = .28$; range = 0-16) placement changes in the 36 months between Waves 1 and 4. For both out-of-home placements and placement changes, variables were notably non-normal in distribution, heavily weighted toward zero.

Regarding symptoms of mental health problems, youths’ report of their raw scores for YSR externalizing problems at each wave is presented in Table 2. Twenty-three percent of participants reported clinically significant externalizing symptoms (T-scores ≥ 64) at Wave 1, 22.7% at Wave 3, and 21.4% at Wave 4; there were no gender differences in reports of externalizing symptoms. Overall, rates of internalizing problems decreased over the course of the study (see Table 2 for raw scores); 17.8% of participants reported clinically significant levels of internalizing problems at Wave 1, while this number dropped to 8.7% at Wave 3 and 3.6% at Wave 4. Across all waves, females reported significantly higher levels of internalizing symptoms than males (see Table 3).

Bivariate correlations are presented in Table 4; relationships among the outcome variables of interest are described in more detail below. Older youths were more likely to report poorer relationships with caregivers at Waves 1 and 3 ($p < .001$), and were more likely to experience placement changes both between Waves 1 and 3 ($p < .01$) and

between Waves 3 and 4 ($p < .001$; see Table 4). In terms of mental health symptoms, youth age was significantly correlated ($p < .05$) with internalizing and externalizing symptoms only at Wave 1.

Aim 1: To examine cross-sectional associations between youths' relationships with caregivers and youth mental health separately across internalizing and externalizing problems.

Hypothesis 1a: Caregiver relationship quality is expected to be negatively correlated with externalizing problems. As shown in Table 4, in the overall sample, youths' report of the CCR was negatively correlated with externalizing symptoms at all waves ($p < .001$). The sample was then divided into subgroups reflecting OOH placement status, and the strength of the correlations was compared across subgroups using Fisher's r -to- z transformations. When comparing children who were placed in OOH care over the course of the study ($n = 469$) to those who were not ($n = 651$), the cross-sectional correlations between the CCR and externalizing problems at each wave remained significant at $p < .001$ (see Tables 5 and 6). Interestingly, at Wave 1, this correlation was significantly stronger ($p < .05$) in the children who were not placed in OOH care compared to those who were; this pattern reversed at Wave 3, with the OOH care group reporting a stronger correlation ($p < .01$), and by Wave 4 there was no significant difference in the strength of the correlations between groups. When the sample was divided to compare youth who had a placement change between Waves 1 and 3 (early placement change; $n = 283$; see Table 7) to those who had a placement change between Waves 3 and 4 (later placement change; $n = 178$; see Table 8), there were no

significant differences in the externalizing–CCR correlations between groups at any time point.

Taken together, there were significant negative correlations between externalizing problems and the CCR at all time points. Early on in the study (at Wave 1), the subgroup of youth who had OOH placements had a stronger correlation between externalizing symptoms and the CCR, but they had a weaker correlation at later time points (Waves 3 and 4).

Hypothesis 1b: Caregiver relationship quality is expected to be negatively correlated with internalizing problems. As with externalizing symptoms, in the overall sample, youths' internalizing symptoms were negatively correlated with their report of the CCR at all waves ($p < .001$; see Table 4). When divided into subgroups reflecting OOH placement status, correlations remained significant at each time point ($p < .001$; see Tables 9 and 10). At Wave 1, youth who were placed in OOH care over the course of the study ($n = 469$; see Table 9) had weaker correlations between internalizing problems and the CCR than those who were not ($n = 651$; Fisher's r -to- z transformation: $p < .05$; see Table 10); this significant difference between the strength of the correlations disappeared by Waves 3 and 4. When the sample was divided to compare youth with early placement change ($n = 283$; see Table 11) and later placement change ($n = 178$; see Table 12), there were no significant differences in the internalizing–CCR correlations between groups at any time point.

Altogether, therefore, there were significant negative correlations between internalizing problems and the CCR at all time points. Early on in the study (at Wave 1), the subgroup of youth who had OOH placements had a weaker correlation between

internalizing symptoms and the CCR, but this was no longer true at later time points (Waves 3 and 4). The timing of the placement change did not appear to make a significant difference in the strength of the relationship.

Aim 2: To examine the longitudinal and bidirectional associations between the CCR and mental health symptoms over time.

This aim was addressed by examining bivariate correlations between the variables in question at the appropriate time points. For both externalizing and internalizing problems, two autoregressive cross-lagged models were then tested, to examine reciprocal effects over time while controlling for the stability of each variable. Figures 1 and 3 represent the basic autoregressive cross-lagged models of externalizing and internalizing symptoms (respectively) with the CCR quality over the three waves of data collection. All structural equation models controlled for age and gender. Figures 2 and 4 present the final models for externalizing and internalizing symptoms, respectively; these models incorporated placement change into the existing models, to address Aims 3 and 4 (see below). The overall fit of all models was acceptable to good (fit indices presented in Figures 1-4), suggesting that they appropriately represented the patterns in the data, and that individual paths could be interpreted.

Hypothesis 2a: Externalizing symptoms at one time point will be negatively associated with the CCR in the subsequent time point. As can be seen in Table 2, the negative bivariate correlation between Wave 1 externalizing symptoms and the CCR at Wave 3 was significant ($p < .001$); this was also true for Wave 3 externalizing symptoms with Wave 4 CCR. Figure 1 presents the results of the basic autoregressive cross-lagged model for externalizing symptoms and the CCR; the path from Wave 1 externalizing

symptoms to Wave 3 CCR quality was nonsignificant, though the path from Wave 3 externalizing symptoms to Wave 4 CCR quality was significant ($p < .05$). However, when entered into the more complex model accounting for the effect of placement changes (see Figure 2), the path from Wave 3 externalizing symptoms to Wave 4 CCR quality was reduced to trend-level significance ($p < .10$). This indicates that when accounting for the autoregressive effects of individual stability on both the CCR and externalizing variables, as well as the relative effect of placement change, the effect of externalizing problems on the CCR over time was reduced to nonsignificance.

Hypothesis 2b: The CCR at one wave will have a negative main effect on externalizing problems at future waves, after accounting for stability in externalizing problems. Similar to the results of Hypothesis 2a, above, initial bivariate correlations indicated that youths' report of the CCR at Waves 1 and 3 were significantly negatively associated with subsequent externalizing problems at Waves 3 and 4, respectively ($p < .001$; see Table 2). Again, these effects did not hold up once the model accounted for the individual stability of externalizing symptoms and the CCR (see Figure 1), or in the larger model accounting for the effects of placement change (see Figure 2).

Hypothesis 2c: Internalizing symptoms at one time point will be negatively associated with the CCR in the subsequent time point. As indicated in Table 2, internalizing symptoms at Wave 1 were significantly negatively correlated with Wave 3 CCR quality ($p < .001$), as were Wave 3 internalizing symptoms and Wave 4 CCR quality ($p < .001$). When entered into the autoregressive cross-lagged model, this relationship held for the path from Wave 1 internalizing to Wave 3 CCR ($b = -.152, p < .05$), but was not significant from Wave 3 internalizing to Wave 4 CCR (see Figure 3). In

the larger model accounting for the effects of placement change, a similar pattern emerged (see Figure 4).

Hypothesis 2d: The CCR at one wave will have a negative main effect on internalizing problems at future waves, after accounting for stability in internalizing problems. Bivariate correlations revealed a significant negative association between the CCR at Wave 1 and subsequent internalizing symptoms at Wave 3 ($p < .001$), as well as between the CCR at Wave 3 and internalizing symptoms at Wave 4 ($p < .001$). However, when entered into the autoregressive cross-lagged models that accounted for the stable effects of prior internalizing symptoms (Figure 3), as well as change in home placement (Figure 4), these associations were reduced to nonsignificance.

Aim 3: To examine bidirectional relationships between mental health symptoms and placement change over time.

Hypothesis 3a: Externalizing symptoms at one wave will predict subsequent placement changes. As shown in Table 2, Wave 1 externalizing problems were positively associated with home placement changes between Waves 1 and 3 ($p < .001$). However, this relationship did not hold later on in the study: externalizing problems at Wave 3 were not significantly related to placement changes between Waves 3 and 4. The same pattern emerged when analyzed in the overall model (Figure 2): externalizing symptoms significantly predicted placement change early in the study ($b = .287, p < .05$), but not later ($b = .138, NS$).

Hypothesis 3b: Placement changes at one time point will predict subsequent externalizing symptoms. Placement changes between Waves 1 and 3 were significantly correlated with Wave 3 externalizing problems ($p < .001$; see Table 2), though changes

between Waves 3 and 4 were significantly *negatively* associated with these symptoms at Wave 4 ($p < .05$). When entered into the full model, these relationships became nonsignificant at all time points (see Figure 3).

Hypothesis 3c: Internalizing symptoms at one wave will predict subsequent placement changes. Bivariate correlations were significant between internalizing symptoms at Wave 1 and placement changes between Waves 3 and 4 ($p < .001$; see Table 2), as well as between Wave 3 internalizing symptoms and placement changes between Waves 3 and 4 ($p < .001$; see Table 2). However, when entered into the full model, these relationships were reduced to nonsignificance, with the exception of a trend-level ($p < .10$) relationship between later placement change and subsequent externalizing symptoms (see Figure 4).

Hypothesis 3d: Placement changes at one time point will predict subsequent internalizing symptoms. Placement change early on in the study (between Waves 1 and 3) only predicted subsequent Wave 3 internalizing problems at the trend level ($p = .06$; see Table 2). Interestingly, placement changes later on (between Waves 3 and 4) *did* significantly predict Wave 4 internalizing problems ($p < .001$; see Table 2). However, in the full model, these relationships were no longer significant at any time point (see Figure 4).

Aim 4: To examine bidirectional relationships between the CCR and placement changes over time.

Hypothesis 4a: A higher-quality CCR at one wave will negatively predict subsequent placement changes. As predicted, bivariate correlations between youths' report of the CCR at one wave, and subsequent placement changes were statistically

significant in a negative direction ($p < .05$; see Table 2). These relationships were reduced to nonsignificance when entered into the overall models, however (see Figures 2 and 4).

Hypothesis 4b: Placement changes at one wave will negatively predict the CCR at subsequent waves. Early placement change (between Waves 1 and 3) negatively predicted the CCR at Wave 3 ($p < .001$; see Table 2). Interestingly, this relationship reversed directions later in the study, with placement changes between Waves 3 and 4 positively predicting the CCR at Wave 4 ($p < .001$; see Table 2). These paths were nonsignificant when entered into the complete model for both externalizing and internalizing problems (see Figures 2 and 4).

Chapter Four: Discussion

This study utilized a national, longitudinal sample of youth age 11-16 in the child welfare system to examine the relationships among the caregiver-child relationship (CCR), placement stability, and youth mental health, both cross-sectionally and over time. Based on existing literature, we hypothesized that the quality of the CCR would be negatively associated with both placement changes and with mental health symptoms, and that mental health problems would be positively associated with placement changes. These associations were tested using bivariate correlations among the variables of interest, as well as by fitting the data to autoregressive cross-lagged models to account for both stability within variables, and bidirectional effects over time. Support for our hypotheses was mixed.

Aims 1 and 2 examined the cross-sectional and longitudinal relationships between youths' mental health symptoms and their perceptions of their caregivers. Overall, descriptive statistics revealed that a sizeable portion of youths in the sample experienced clinically significant symptoms of mental health problems, particularly externalizing problems. The rates reported in this study were somewhat lower than the NSCAW prevalence rates reported elsewhere (e.g., 65.7% of youth 11-14 presenting with clinically elevated mental health symptoms; Burns et al., 2004). However, it is important to note that we relied exclusively on youth self-report of clinically elevated problems while prior studies have relied on whether any respondent (caregiver, youth, or teacher)

indicates that the youth has clinically elevated symptoms. Thus, this study focuses on the same high-risk youth included in previous studies, with any differences in prevalence rates being due to which respondents are being included when determining need. In fact, Burns and colleagues (2004) found that adolescents (age 11-14) had the highest level of clinical need when compared to children ages 2-5 and 6-10. As predicted, externalizing problems were negatively correlated with CCR quality at all time points, even when controlling for OOH care status, and early versus later placement change. The same was true for internalizing problems. However, there was limited support for the hypotheses that the CCR and mental health symptoms would influence each other over time. The only consistently significant results in the longitudinal models were that early internalizing problems led to lower-quality CCR, as did later externalizing problems ($p < .10$). Aims 3 and 4 explored whether placement change would predict and be predicted by mental health symptoms and the quality of the CCR over time. The only consistently significant relationship that emerged between placement change and mental health symptoms was that early externalizing problems predicted early placement change, and a trend-level ($p < .10$) relationship between later placement change and subsequent externalizing problems. There was no robust evidence that youths' perceptions of the CCR and placement change influenced one another over time. Still, we believe that results related to placement change should be interpreted with caution. Placement change as calculated for this study was, at best, an imprecise measure of overall home placement instability. Due to missing data at various time points, placement change data was missing for a number of youths in the study, and did not reflect distinctions between youths who went into OOH care and those who moved from one parent's home to

another. In addition, a large portion of youth for whom placement change data was available had zero placement changes, resulting in a non-normal distribution. Taken together, our ability to draw inferences about the relationship between youths' report of the CCR and the number of placement changes they experienced was limited.

Taken together, while the present study did not consistently yield results that were in line with prior research or theory, some important patterns emerged nonetheless. First, there were four longitudinal relationships among variables that held up even after accounting for autoregressive stability, and the influence of other variables: 1) early internalizing symptoms negatively predicted the CCR at the next wave, 2) early externalizing symptoms positively predicted subsequent placement changes, 3) later externalizing symptoms negatively predicted the CCR at the next wave, and 4) later placement change positively predicted subsequent externalizing symptoms (relationships 3 and 4 were only significant at the trend level [$p < .10$]). Regarding relationship 1, it was interesting to note that the negative correlation between Wave 1 internalizing symptoms and Wave 3 CCR was actually stronger for those youth who never experienced OOH care than for those who did; it is possible that in the immediate aftermath of a child welfare investigation, youths who remained at home and experienced depressive symptoms were more withdrawn from their parents. With regard to relationship 2, externalizing symptoms are a well-established risk factor for placement instability (Farmer et al., 2008; O'Neill et al., 2012); what was more surprising was that this relationship did *not* hold for later externalizing problems and subsequent changes. It is possible that earlier in the study, directly following the child welfare investigation, youths and their caregivers were more closely involved with the child welfare system overall.

This may have facilitated earlier placement changes if caregivers were overwhelmed by youths' externalizing behaviors. Regarding relationship 3, it is notable that levels of externalizing symptoms stayed fairly constant over the course of the study, and this correlation was equally strong for youths who did and did not experience OOH care (see Tables 4-7); it may be that youths' disruptive behaviors degraded their relationships with caregivers over the course of time. Finally, with respect to relationship 4, this was the only longitudinal relationship in our study supporting Newton and colleagues' (2000) finding that placement changes could lead to higher rates of behavior problems in youth. While it was curious that this did not hold up in our study at other time points or for internalizing problems, we again point to our difficulties accurately capturing placement changes in this study, and advise readers that inferences regarding placement instability be made with caution.

A second noteworthy pattern in our results was that the quality of the CCR was significantly negatively correlated with both externalizing and internalizing problems at all time points. This indicates that above and beyond the effects of prior symptoms, placement changes, age, and gender, the CCR still accounts for a substantial portion of the variance in mental health outcomes and vice versa. This finding suggests an important avenue for intervention with youth in contact with the child welfare system. Namely, regardless of whom youth are living with or for how long, strengthening the relationship between the youth and the caregiver is a crucial avenue for improving their mental health. There are several evidence-based treatments for this population that strive to increase parental effectiveness and decrease child behavior problems; examples include Parent-Child Interaction Therapy and Multisystemic Therapy, both of which have

shown high effectiveness in trials with families involved in the child welfare system (Barth et al., 2005). There may also be space for dyadic treatments that would address adolescent internalizing problems as well as parent management difficulties. For example, the *Connecting* program for young teens in foster care, as described by Barkan and colleagues (2014), is a new adaptation of the evidence-based treatment, *Staying Connected with Your Teen*. It aims to prevent adolescent behavioral problems by increasing caregiver-teen connectedness and teaching caregivers to respond appropriately and sensitively to the types of concerns foster youth may bring up. While this is a newer treatment without an established evidence base as yet, our results lend support to the idea that this would be a useful avenue by which to influence youths' behavioral symptoms. The reverse may also be true: interventions to alleviate youths' symptoms will likely also increase the quality of the relationship. Landsverk and colleagues (2009) call for an increase in evidence-based treatments to be made available to youth in contact with the child welfare system, particularly treatments that directly involve caregivers. Interventions that aim to improve both the CCR and youths' behavior problems concurrently are undoubtedly the most promising.

A third pattern that emerged in this study was significant autoregressive stability of youths' perception of the CCR over time. This was surprising, particularly given that this consistency held up in the presence of placement change, across different caregivers. It could be argued that youths in the sample actually experienced fairly stable caregiving over the course of the study, including across households; perhaps this would have been related to a consistency in youths' own behavior patterns. However, it is also important to more carefully consider the construct of the CCR as measured by the RAPS. While

this measure demonstrates validity and reliability (Connell, 1998), it is notably short at 12 items total, and does not cover some key aspects of the CCR that could be assessed by other parent-adolescent relationship measures. Examples of other potentially important aspects would include the youth's perception of being loved and accepted, trust in the caregiver, comfort going to the caregiver for advice and support (McGue, Elkins, Walden, & Iacono, 2005). In order to gain a more nuanced understanding of the CCR in this sample, it would be crucial to measure the construct using a multimethod approach, including 1) considering the use of a more comprehensive youth self-report measure, 2) utilizing an observational coding system to measure the relationship objectively, and 3) assessing caregivers' view of the relationship. Then, it would be useful to examine how youths' view of the relationship compared to caregivers' view and to objective assessments, and to measure the differential effects of these two viewpoints on the constructs explored here (i.e., placement change and youth mental health). It may be that caregivers' perception of the relationship is a better predictor of placement change than youths' perceptions, given that caregiving strain is one common reason foster parents request that a youth be removed from their care (E. Farmer, Lipscombe, & Moyers, 2005; Khoo & Skoog, 2014). Similarly, a more comprehensive self-report measure of youths' perceptions of the CCR could capture more robust longitudinal relationships between the CCR and youth mental health.

In sum, this study lends support to the importance of caregiving in this high-risk sample of youth in contact with the child welfare system. Evidence was strong for a cross-sectional relationship between the CCR and youth mental health symptoms at each time point, though the evidence for longitudinal relationships between these constructs

was more limited. We believe this was due to imperfect assessment of the CCR construct with the RAPS alone, or possibly that other aspects of the caregiving environment, such as provision of basic needs, were of greater importance in predicting mental health longitudinally. In addition, we found limited evidence for the role of placement change in either predicting or being predicted by the CCR or youth mental health symptoms in this sample; again, this may have been due to the imprecise measurement of placement change in this study,

Limitations and Future Directions

There were several aspects of this study that could be improved or expanded upon in future research. First, with regards to the calculation of placement change, our variable was derived from the NSCAW data set in a creative, though unorthodox, manner; our method did not ultimately allow us to distinguish youth who were in in-home care (with a biological parent, or even moving back and forth from one parent's home to another) from those in out-of-home care at any given time point. While we would argue that *disruption in caregiving* was the common denominator among the youth who changed home placements, a case could be made that the two groups are too heterogeneous to be combined into one model. Future research with similar samples would do well to differentiate among youths who a) move from in-home care to another in-home care arrangement, b) move from in-home to out-of-home care, c) move from out-of-home care to another out-of-home care arrangement, or d) move from out-of-home care back to in-home care (i.e., "reunification"). In addition, as discussed above, future studies should demonstrate care in measuring placement changes that occur between waves of data collection, to minimize the risk of missing data.

A second limitation was that we relied exclusively on youths' own reports of their symptoms and the CCR in the present study. There has been a large body of research examining whether self- or parent-report yields a more accurate report of child mental health symptoms, and it is generally agreed that obtaining data on child functioning from multiple informants is best (Kraemer et al., 2003; Silverman & Ollendick, 2008). The present study chose to utilize youths' report in order to achieve stability of reporter across waves; the validity of caregiver-report measures of youth symptoms would likely have been influenced by the fact that some youths changed home placements – and hence caregivers – from wave to wave. Still, future examinations of the questions posed here would do well to utilize a multiple-informant approach in terms of youth mental health symptoms. Regarding the CCR, although there was no corresponding caregiver-report measure of the CCR in the NSCAW survey, this study might have benefited from the ability to examine similar constructs as those measured in the RAPS (Emotional Security, Involvement, Autonomy Support, and Structure) from the caregivers' perspective, or from using a more comprehensive and multimethod assessment of the CCR altogether. It would be important to determine the degree of agreement between youth and caregiver, as well as how much one or the other explains variance in outcomes regarding mental health and placement change.

Finally, there were a number of variables that could have been useful to examine within the models presented here, but that were beyond the scope of the present study to incorporate. Most apparent would be the inclusion of placement characteristics as potential moderators of effects; we did not include factors such as the placement type (e.g., kinship care, foster care, or residential treatment facilities), length of placement,

number of other children in the home, or characteristics of the caregivers themselves. Caregiver attributes such as the extent of their experience providing foster care, their own mental health symptoms, and external (e.g., financial or social) stressors experienced by the caregivers could be reasonably expected to negatively impact the CCR, irrespective of youths' own mental health problems.

Conclusion

This study was the first one known to these authors to prospectively examine how youths' perception of their relationships with caregivers contributed to placement changes and youth mental health symptoms in a sample of youth in contact with the child welfare system. While results did not consistently confirm our hypotheses regarding all of the specific relationships among these variables, our findings overall suggest a robust relationship between the CCR and youth mental health symptoms in this high-risk sample. This indicates that interventions for youth in the child welfare system should focus not on youth symptoms in isolation, but also on improving their relationships with caregivers, as a way of optimizing youth outcome within this stressful context.

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Appendix A: Tables

Table 1
Timeline of NSCAW Data Collection

Wave	1	2	3	4	5
Start and End Dates	11/15/99- 04/30/01	10/01/00- 03/31/02	04/01/01- 09/30/02	08/01/02- 02/28/04	09/05/05- 12/30/07
Months after Close of Investigation	2-6	12	18	36	59-97
Respondent					
Child	X		X	X	X
Current Caregiver	X	X	X	X	X
Caseworker	X	X	X	X	X
Teacher	X		X	X	X

from: NSCAW Data File User's Manual, June 2008

Table 2
Descriptives and Demographics

	M	SE		%	SE
Age	12.75	0.07	Gender (% female)	58.3	0.03
CCR Wave 1	39.47	0.57	Physical Abuse	31.2	0.03
CCR Wave 3	40.03	0.53	Sexual Abuse	13.0	0.03
CCR Wave 4	40.00	0.41	Emotional Abuse	8.5	0.02
No. of Placement Changes 1-3	1.06	0.16	Neglect	41.5	0.03
No. of Placement Changes 3-4	1.11	0.26	Other Abuse	5.8	0.02
Externalizing Sxs Wave 1	14.05	0.69	Black	29.8	0.04
Externalizing Sxs Wave 3	14.41	0.64	White	48.8	0.04
Externalizing Sxs Wave 4	14.14	0.60	Hispanic	15.2	0.03
Internalizing Sxs Wave 1	12.97	0.83	Other Race	6.2	0.01
Internalizing Sxs Wave 3	10.95	0.70			
Internalizing Sxs Wave 4	9.68	0.53			

Notes: CCR = Caregiver-Child Relationship (RAPS Total Score). Sxs = Symptoms.

Table 3
Means of Key Outcome Variables, by Race, Maltreatment Type, and Gender

Variable	Mean (SE): Race				Mean (SE): Maltreatment Type					Mean (SE): Gender	
	Black	White	Hispanic	Other	Physical	Sexual	Emotional	Neglect	Other	Male	Female
	<i>n</i> =300	<i>n</i> =432	<i>n</i> =144	<i>n</i> =81	<i>n</i> =240	<i>n</i> =180	<i>n</i> =69	<i>n</i> =337	<i>n</i> =57	<i>n</i> =492	<i>n</i> =687
CCR W. 1	40.39 (.68)	39.71 (.80)	37.48 (1.60)	38.49 (1.70)	38.53 (1.30)	40.74 (1.30)	38.51 (2.44)	39.48 (.61)	42.05 (.95)	40.55 (.69)	38.70 (.82)
CCR W. 3	39.83 (1.08)	40.69 (.65)	38.45 (1.08)	40.02 (2.24)	39.99 (.86)	39.18 (1.12)	40.37 (1.45)	39.98 (.84)	41.91 (1.07)	41.36 (.71) ^a	39.08 (.68) ^a
CCR W. 4	40.57 (.73)	40.10 (.53)	38.90 (1.06)	38.82 (1.59)	38.90 (.69)	39.40 (.63)	40.11 (1.12)	40.51 (.53)	42.05 (1.46)	40.47 (.57)	39.52 (.50)
Plcmt Chg 1-3	1.39 (.21) ^{a,b}	1.08 (.23) ^c	0.39 (.18) ^{a,c}	0.55 (.24) ^b	1.02 (.32)	0.84 (.32)	0.87 (.41)	1.09 (.24)	2.28 (.76)	0.89 (.24)	0.96 (.19)
Plcmt Chg 3-4	1.40 (.58)	0.78 (.17)	0.98 (.27)	1.42 (.43)	0.77 (.24)	0.98 (.39)	0.42 (.17)	1.04 (.21)	0.77 (.17)	0.68 (.14)	0.94 (.17)
Ext. W. 1	11.67 (1.02) ^a	15.56 (.95) ^a	13.35 (1.20)	14.37 (2.17)	15.38 (1.22) ^a	14.42 (1.02) ^b	14.01 (.80) ^c	13.59 (1.04) ^d	8.93 (1.33) ^{a,b,c,d}	13.55 (1.01)	14.35 (.81)
Ext. W. 3	12.90 (.86)	15.72 (.98)	12.52 (.90)	15.02 (2.35)	14.75 (.86) ^a	12.75 (1.71)	12.74 (1.12) ^b	15.86 (1.08) ^b	9.14 (1.30) ^{a,b}	13.55 (1.01)	14.35 (.81)
Ext. W. 4	11.92 (.97) ^a	15.49 (.87) ^a	13.88 (1.20)	13.63 (1.64)	14.72 (1.20) ^a	14.01 (1.33) ^b	14.50 (1.53) ^c	14.48 (1.03) ^d	10.48 (.90) ^{a,b,c,d}	14.29 (1.09)	14.33 (.71)
Int. W. 1	11.29 (1.34)	13.31 (1.19)	15.74 (2.25)	10.44 (1.89)	13.57 (1.46) ^a	17.07 (2.45) ^b	14.31 (1.64) ^c	12.11 (1.03) ^d	6.61 (1.34) ^{a,b,c,d}	10.36 (1.07) ^a	14.93 (1.04) ^a
Int. W. 3	8.62 (.71) ^{a,b}	11.68 (1.05) ^a	13.73 (1.02) ^{b,c}	9.35 (1.45) ^c	11.27 (1.14)	13.02 (1.95)	10.94 (1.80)	11.04 (.85)	6.56 (1.61)	9.09 (.98) ^a	12.40 (.82) ^a
Int. W. 4	8.77 (.77)	9.74 (.79)	11.51 (.60)	9.00 (1.51)	9.48 (.76)	12.07 (1.78)	8.50 (1.11)	9.62 (.62)	7.30 (1.66)	7.31 (.55) ^a	11.46 (.69) ^a

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$. CCR = Caregiver-Child Relationship (RAPS Total Score). W. 1 = Wave 1. W. 3 = Wave 3. W. 4 = Wave 4. Plcmt Chg 1-3 = Number of placement changes between Waves 1 & 3. Plcmt Chg 3-4 = Number of placement changes between Waves 3 & 4. Ext. = Externalizing symptoms. Int. = Internalizing symptoms. Within each category, means in the same row that share a superscript differ significantly ($p < .05$) from each other in t -tests.

Table 4
Bivariate Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11
1. CCR W. 1											
2. CCR W. 3	.48 ***										
3. CCR W. 4	.29 ***	.38 ***									
4. Plcmt Chg 1-3	-.22 ***	-.12 ***	.05								
5. Plcmt Chg 3-4	.18 ***	-.06 *	.12 ***	.21 ***							
6. Ext. W. 1	-.47 ***	-.30 ***	-.24 ***	.25 ***	-.11 ***						
7. Ext. W. 3	-.26 ***	-.28 ***	-.24 ***	.19 ***	.03	.64 ***					
8. Ext. W. 4	-.22 ***	-.17 ***	-.42 ***	.13 ***	-.06 *	.55 ***	.66 ***				
9. Int. W. 1	-.45 ***	-.35 ***	-.14 ***	.22 ***	-.07 *	.66 ***	.38 ***	.28 ***			
10. Int. W. 3	-.32 ***	-.41 ***	-.19 ***	.05 [†]	.13 ***	.44 ***	.60 ***	.36 ***	.60 ***		
11. Int. W. 4	-.23 ***	-.31 ***	-.38 ***	-.08 **	.19 ***	.32 ***	.38 ***	.56 ***	.40 ***	.59 ***	
12. Youth Age	-.14 ***	-.18 ***	-.03	.09 **	.11 ***	.21 ***	.05 [†]	.01	.07 *	.04	.01

Notes: [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. CCR = Caregiver-Child Relationship (RAPS Total Score). W. 1 = Wave 1. W. 3 = Wave 3. W. 4 = Wave 4. Plcmt Chg 1-3 = Number of placement changes between Waves 1 & 3. Plcmt Chg 3-4 = Number of placement changes between Waves 3 & 4. Ext. = Externalizing symptoms. Int. = Internalizing symptoms.

Table 5
Bivariate correlations examining the CCR and Externalizing Symptoms: Youth who experienced OOH care over the course of the study

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.30 ***	1.00				
3. CCR Wave 4	.29 ***	.48 ***	1.00			
4. Externalizing Wave 1	-.41 ***	-.33 ***	-.28	1.00		
5. Externalizing Wave 3	-.29 ***	-.40 ***	-.29 ***	.60 ***	1.00	
6. Externalizing Wave 4	-.14 **	-.35 ***	-.42 ***	.42 ***	.64 ***	1.00

Notes: n=469 * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6
Bivariate correlations examining the CCR and Externalizing Symptoms: Youth who did not experience OOH care over the course of the study

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.62 ***	1.00				
3. CCR Wave 4	.31 ***	.38 ***	1.00			
4. Externalizing Wave 1	-.51 ***	-.30 ***	-.22 ***	1.00		
5. Externalizing Wave 3	-.28 ***	-.25 ***	-.22 ***	.65 ***	1.00	
6. Externalizing Wave 4	-.24 ***	-.14 ***	-.43 ***	.60 ***	.67 ***	1.00

Notes: n=651 * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7
Bivariate correlations examining the CCR and Externalizing Symptoms: Youth who experienced a placement change between Waves 1 and 3 (early placement change)

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.29 ***	1.00				
3. CCR Wave 4	.24 ***	.41 ***	1.00			
4. Externalizing Wave 1	-.41 ***	-.21 ***	-.16 **	1.00		
5. Externalizing Wave 3	-.39 ***	-.32 ***	-.21 ***	.62 ***	1.00	
6. Externalizing Wave 4	-.12 **	-.34 ***	-.34 ***	.39 ***	.63 ***	1.00

Notes: n=283 * $p < .05$, ** $p < .01$, *** $p < .001$

Table 8
Bivariate correlations examining the CCR and Externalizing Symptoms: Youth who experienced a placement change between Waves 3 and 4 (later placement change)

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.33 ***	1.00				
3. CCR Wave 4	.33 ***	.52 **	1.00			
4. Externalizing Wave 1	-.48 ***	-.22 ***	-.14 †	1.00		
5. Externalizing Wave 3	-.34 ***	-.38 ***	-.25 ***	.58 ***	1.00	
6. Externalizing Wave 4	-.22 **	-.33 ***	-.36 ***	.49 ***	.73 ***	1.00

Notes: n=178. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 9
Bivariate correlations examining the CCR and Internalizing Symptoms: Youth who experienced OOH care over the course of the study

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.30 ***	1.00				
3. CCR Wave 4	.27 ***	.49 ***	1.00			
4. Internalizing Wave 1	-.40 ***	-.32 ***	-.11 *	1.00		
5. Internalizing Wave 3	-.28 ***	-.36 ***	-.17 ***	.58 ***	1.00	
6. Internalizing Wave 4	-.12 **	-.34 ***	-.32 ***	.21 ***	.48 ***	1.00

Notes: n=469. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 10
Bivariate correlations examining the CCR and Internalizing Symptoms: Youth who did not experience OOH care over the course of the study

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.62 ***	1.00				
3. CCR Wave 4	.32 ***	.38 ***	1.00			
4. Internalizing Wave 1	-.52 ***	-.37 ***	-.17 ***	1.00		
5. Internalizing Wave 3	-.37 ***	-.45 ***	-.22 ***	.61 ***	1.00	
6. Internalizing Wave 4	-.26 ***	-.32 ***	-.41 ***	.48 ***	.65 ***	1.00

Notes: n=651. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 11

Bivariate correlations examining the CCR and Internalizing Symptoms: Youth who experienced a placement change between Waves 1 and 3 (early placement change)

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.27 ***	1.00				
3. CCR Wave 4	.23 ***	.41 ***	1.00			
4. Internalizing Wave 1	-.46 ***	-.29 ***	.01	1.00		
5. Internalizing Wave 3	-.31 ***	-.28 ***	-.06	.55 ***	1.00	
6. Internalizing Wave 4	-.13 *	-.34 ***	-.31 ***	.15 **	.38 ***	1.00

Notes: n=283. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 12

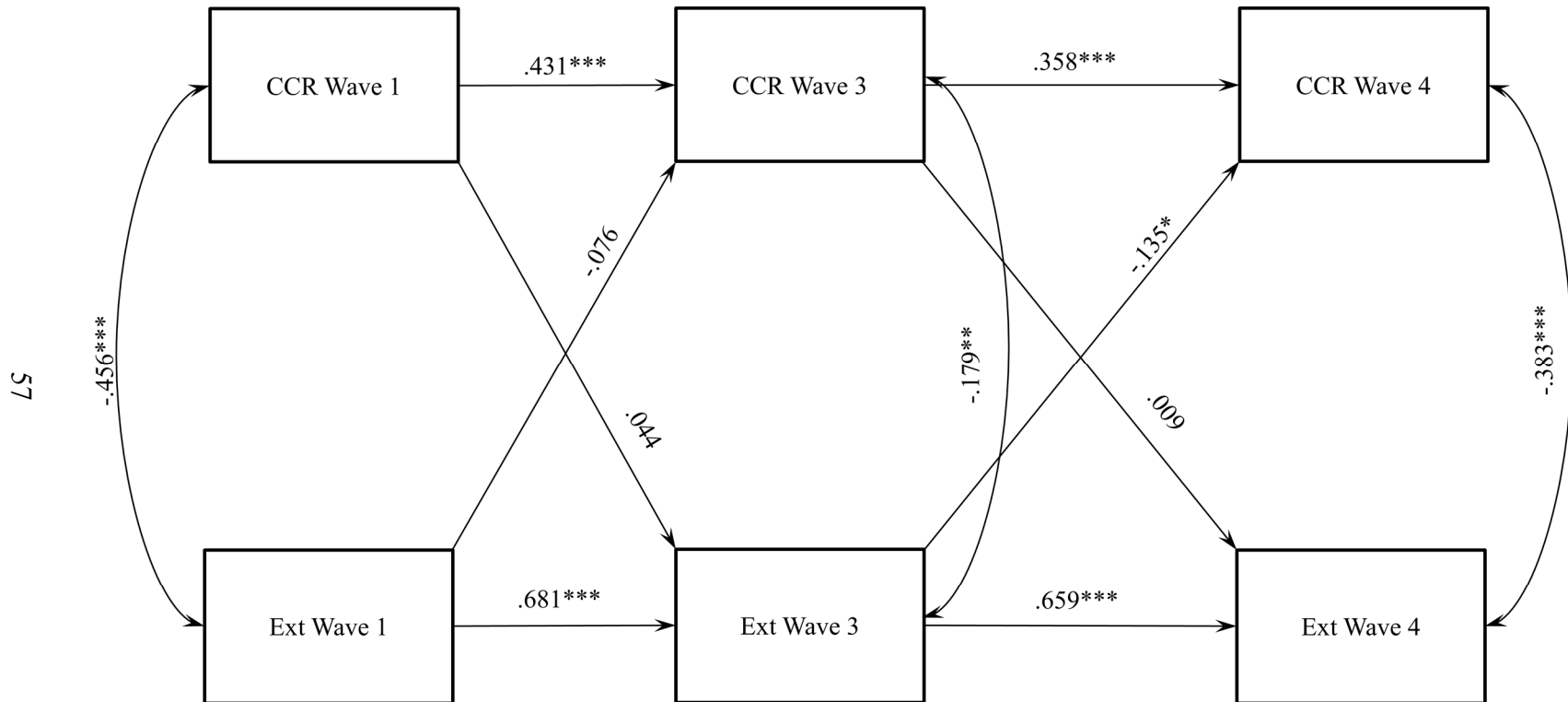
Bivariate correlations examining the CCR and Internalizing Symptoms: Youth who experienced a placement change between Waves 3 and 4 (later placement change)

Variable	1	2	3	4	5	6
1. CCR Wave 1	1.00					
2. CCR Wave 3	.32 ***	1.00				
3. CCR Wave 4	.33 ***	.51 ***	1.00			
4. Internalizing Wave 1	-.50 ***	-.25 ***	-.18 *	1.00		
5. Internalizing Wave 3	-.16 *	-.20 **	-.15 *	.31 ***	1.00	
6. Internalizing Wave 4	-.23 **	-.32 ***	-.30 ***	.45 ***	.48 ***	1.00

Notes: n=178. * $p < .05$, ** $p < .01$, *** $p < .001$

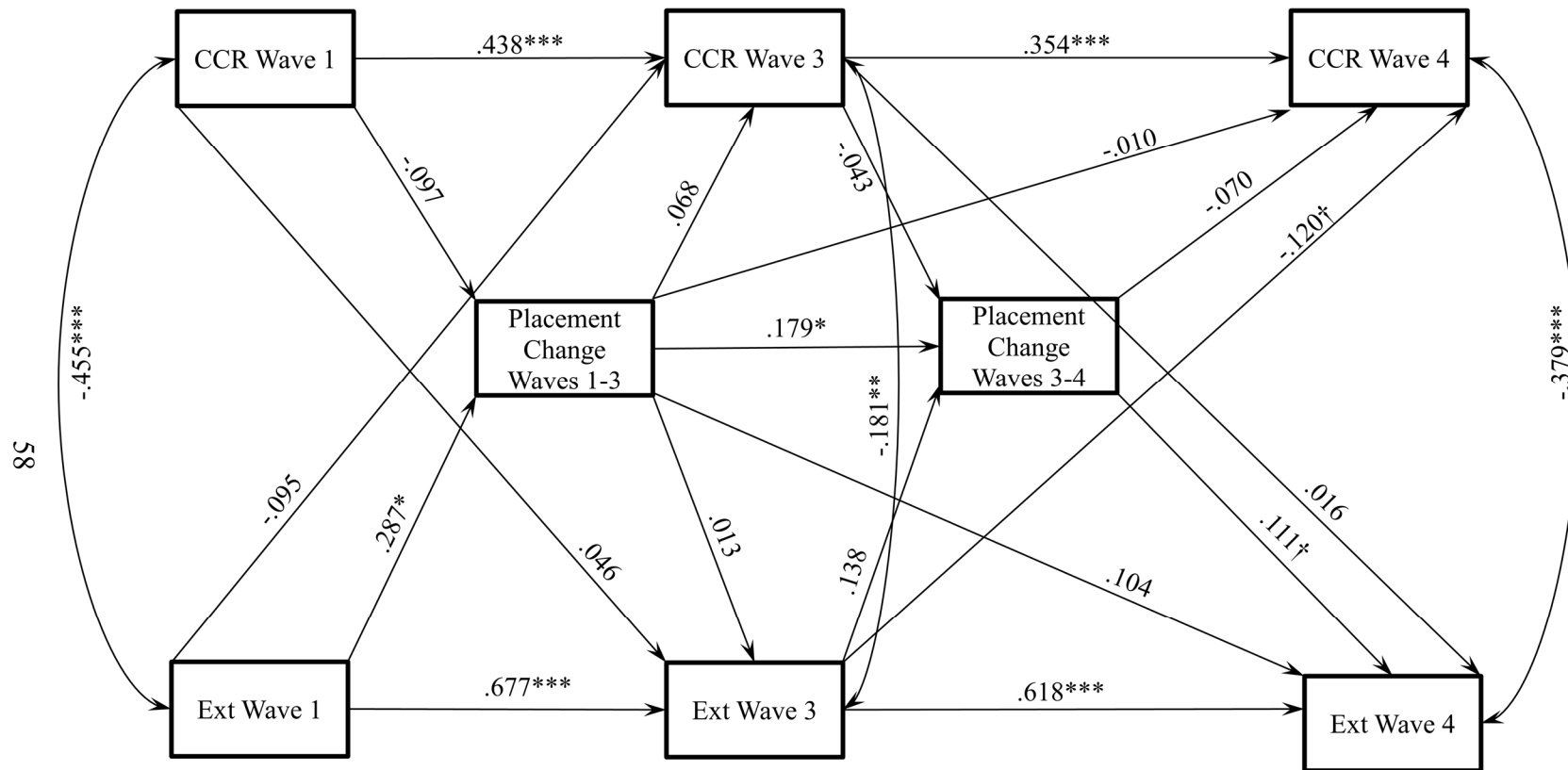
Appendix B: Figures

Figure 1: Autoregressive Cross-Lagged Model of CCR and Youth Externalizing Symptoms



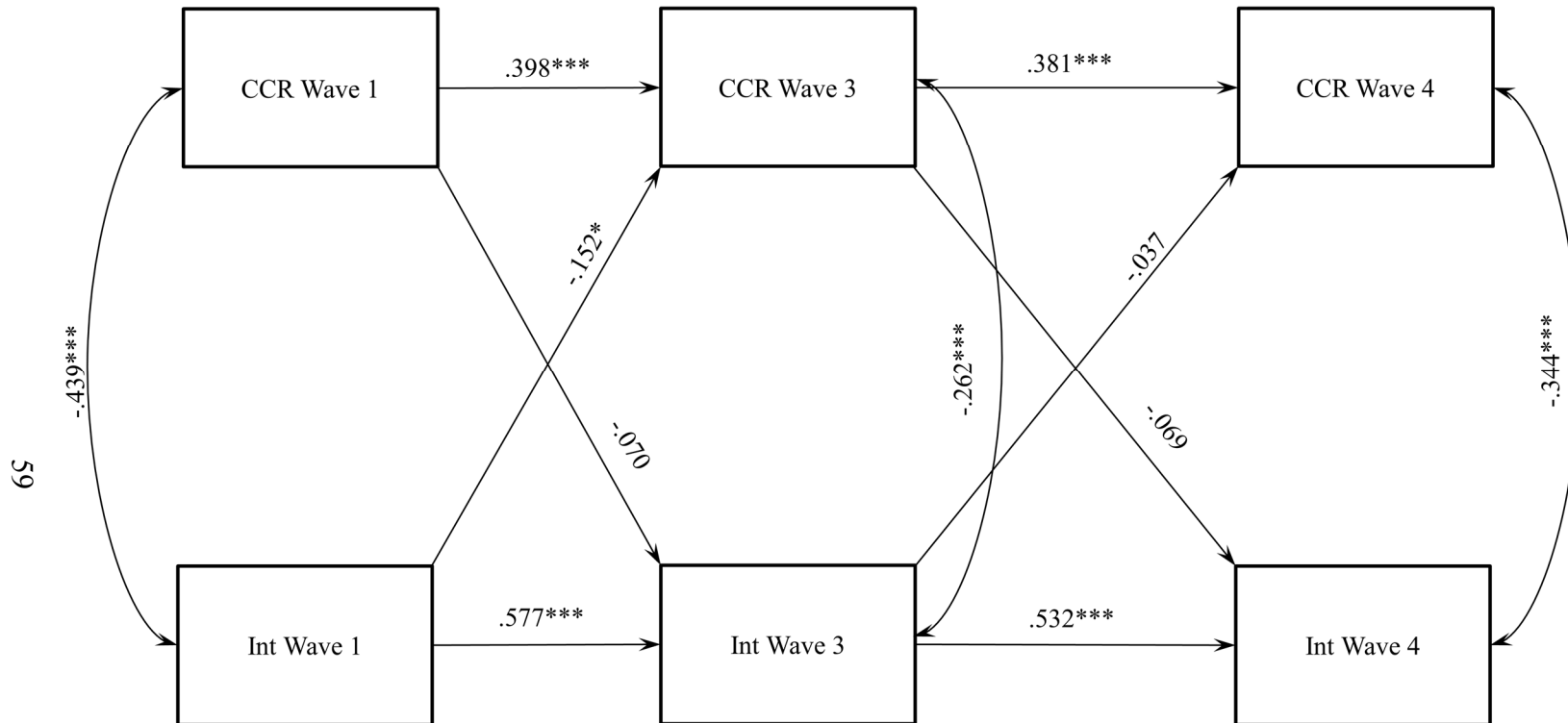
N=1143. $\chi^2(df)=16.973(4)$, CFI=.968, TLI = .821, RMSEA = .053

Figure 2: Autoregressive Cross-Lagged Model of CCR, Placement Change, and Youth Externalizing Symptoms



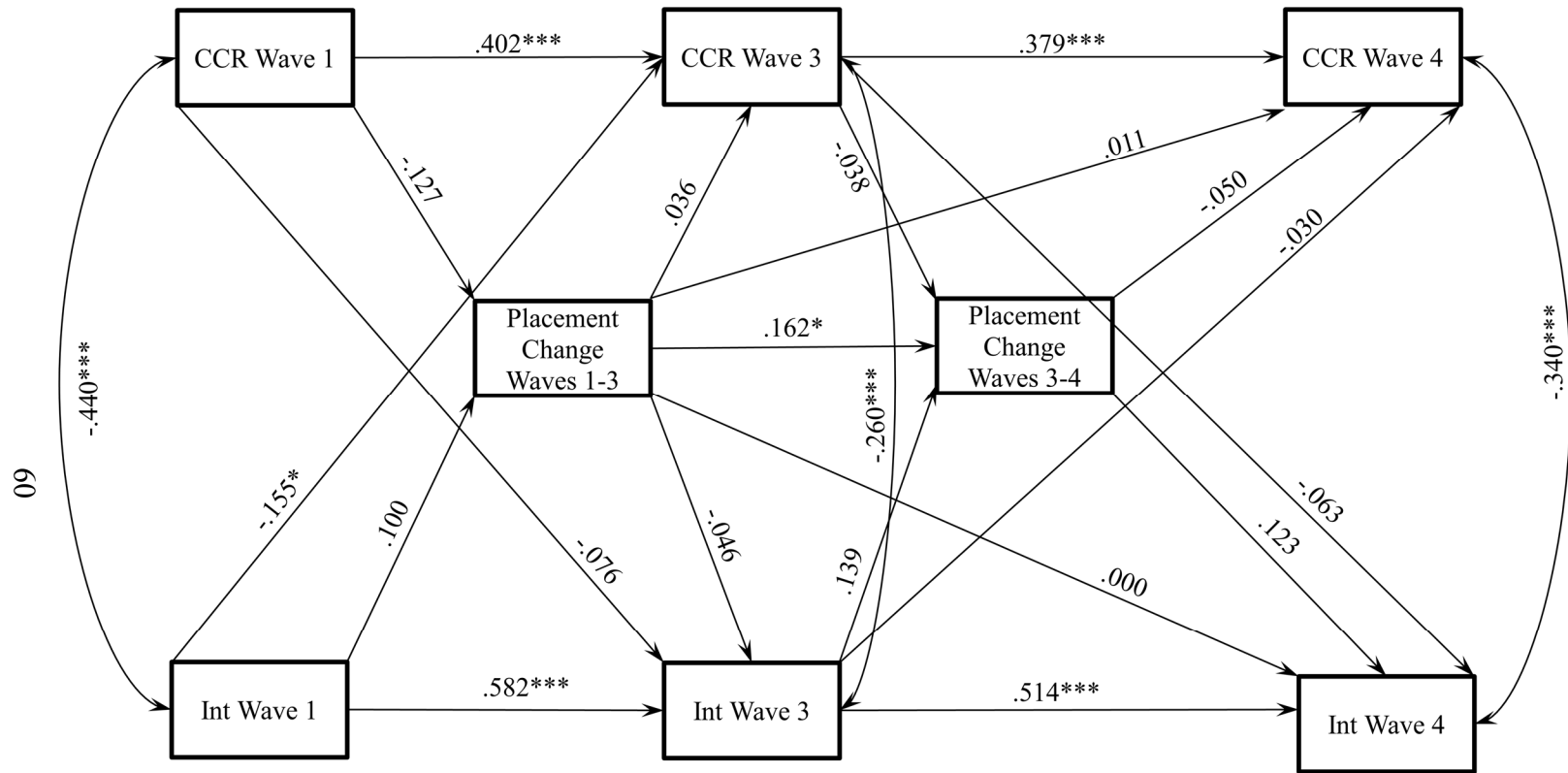
N=1143. $\chi^2(df)=31.281 (6)$, CFI=.953, TLI = .698, RMSEA = .061

Figure 3: Autoregressive Cross-Lagged Model of CCR and Youth Internalizing Symptoms



N=1143. $\chi^2(df)=2.604(4)$, CFI=1.000, TLI = 1.021, RMSEA = .000

Figure 4: Autoregressive Cross-Lagged Model of CCR, Placement Change, and Youth Internalizing Symptoms



N=1143. $\chi^2(df)= 9.298(6)$, CFI=.993, TLI =.954, RMSEA =.022