

## CURRICULUM VITAE

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3. Lee, S. J. & Shipe, S. L. (2014). Influences on Interdisciplinary Collaboration among Social work and Health Sciences Students. *Advances in Social Work, 15*(2), 352-367.
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## **Abstract**

Independent Living Programs and Changes in Resilience of Transition-age Foster Youth

Sang Jung Lee, Doctor of Philosophy, 2016

Dissertation Directed by Dr. Donna Harrington

The transition to living independently is a challenge for youth who have been living in foster care. Independent Living Programs (ILPs) are designed to help transition-age foster care youth. However, limited rigorous examinations have been done. Therefore, this study aims to examine the relationship between Independent Living Programs and resilience among transition-age foster care youth. The social ecology of resilience was used to guide the secondary analysis of a sample of 917 transition-age foster youth from three ILPs of the Multi-Site Evaluation of Foster Youth Programs (Chafee Independent Living Evaluation Project, 2001-2010). Multilevel analyses were used to examine the impact of each ILP on resilience and the role of ILP participation on resilience in the social environmental contexts of transition-age foster care youth.

The three ILPs examined in this study did not outperform services as usual. In addition, participation in the three ILPs did not significantly predict changes in resilience after controlling for individual and social environmental factors. However, gender and externalizing behavior problems at the individual level significantly predicted change in resilience. Compared to male youth, female youth presented greater positive change in resilience. When youth had lower levels of behavior problems at baseline, they were more likely to improve on resilience. Social support was the only significant predictor of change in resilience at the micro-system level; when youth had higher levels of social support at baseline, they were more likely to improve on resilience. At the meso/exo-

system level, foster parent support, community participation, and child welfare status were found to be significant predictors of resilience change over time. Youth with higher levels of foster parent support were more likely to improve on resilience. Youth who participated in a community organization at baseline were more likely to increase resilience over two years. Youth in the child welfare system demonstrated higher levels of resilience than youth discharged from the system. The findings of this study underscore the role of child welfare social workers, foster parents, and the child welfare system in preparing youth for independent living.

Independent Living Programs and  
Changes in Resilience of Transition-Age Foster Care Youth

by  
Sang Jung Lee

Dissertation submitted to the faculty of the Graduate School of the  
University of Maryland, Baltimore in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
2016

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## **Dedication**

This dissertation is dedicated to:

my father, Hae Yong Lee who always gives me love and support unconditionally, my  
loving husband, Seokho Hong, and my beautiful son, Jihoon Hong.

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## CHAPTER 1: INTRODUCTION

The purpose of this study is to examine the relationship between Independent Living Programs (ILPs) and resilience among transition-age foster youth. With a social ecological perspective, the role of ILPs on resilience change is investigated in the social environmental contexts of transition-age foster youth. This chapter presents the background and significance of this study.

### 1.1 Problem Statement

The transition to living independently is a challenge for youth who have been living in foster care. This section presents an overview of the problems of foster care youth in transition to living independently, discusses resilience as an asset to deal with difficulties during this transition period, and describes ILPs that are designed to help transition-age youth prepare for transition to living independently.

#### 1.1.1 Foster Care Youth Aging Out

In 2014, there were 415,129 foster care children in the U.S. child welfare system; one in six (16%;  $N = 67,787$ ) were transition-age youth whose ages were 16 to 20 and who were expected to exit foster care before reaching age 21 (U.S. Department of Health and Human Services [USDHHS], 2015). Although every year approximately 20,000 youth age out of foster care to live on their own (Foster Care Alumni of America, n.d.), the percent of youth who age out of foster care has gradually increased during the last decade while the number of children

and youth in foster care decreased (McCoy-Roth, Freundlich, & Ross, 2010). Compared to 7% ( $N=19,008$ ) in 2000, the percentage of youth who aged out increased to 11% ( $N=26,286$ ) in 2011 (Children's Rights, n.d.).

In the general U.S. population, youth typically leave their parental home at the average age of 23 (Williams, 2005). However, many youth return home after the first attempt to live on their own (Williams, 2005), and receive emotional and financial support from their families until finally leaving the parental home around the age of 28 (Clark & Davis, 2005; Mouw, 2004). In contrast, many foster care youth who age out of the system start living on their own when they are 18 years old (Foster Care Alumni of America, n.d.). Since the enactment of the Foster Care Independence Act of 1999, youth can remain in care until the age of 23 depending on state policies (Delgado, Fellmeth, Packard, Prosek, & Weichel, 2007). However, some youth leave foster care before age 23 because the services that the system provides do not meet their needs and others may leave early due to policies (e.g., eligibility, funds, types of services) that vary by state. For example, youth in Connecticut are required to enroll in full-time post-secondary education to stay in care beyond the age of 18 (Egan, 2013). California provides expanded transition services for youth ages 18 to 23 but youth must be involved in an education or vocational program (Children's Advocacy Institute, 2013; Delgado, Fellmeth, Packard, Prosek, & Weichel, 2007, p. 22). Lastly, youth in Illinois, must maintain a C average to stay in a state funded college program until age 23 (Delgado et al., 2007, p. 22; Illinois Department of Children & Family Services, n.d.).

Youth who age out of foster care at the age of 18 are too young to confront the financial, organizational, and emotional responsibilities of living on their own (Wade & Dixon, 2006). Foster care youth may face more challenges than youth in the general population because they are less likely to have material and emotional support from family (Wade & Dixon, 2006) and they lose support from the child welfare system at the same time. Moreover, maltreatment and out-of-home placement experience make them more vulnerable to difficulties that impede successful independent living (Daining & DePanfilis, 2007). For example, disruption in emotional and behavioral development and deficits in brain and neurobiological functioning affect the ability to succeed in home, school, and social relationships in other social contexts (Leve et al., 2012).

Leaving foster care unprepared for living independently puts foster care youth at greater risk of becoming teen parents, living in poverty, being homeless, and becoming involved in the criminal justice system (Aarons, Hazen, Hough, Monn, & Connelly, 2008; Courtney et al., 2005). Alumni from one foster care program (Casey Family Services) reported a 17% pregnancy rate, which was twice that of the general population (Pecora et al., 2003). A national survey revealed that one-quarter (25%) of foster care youth had experience of being homeless at least one night after exiting foster care (Cook, Fleishman, & Grimes, 1991) and 22% of Casey Family Services alumni had been homeless at least one night (Pecora et al., 2003). Foster care youth who aged out were less than half as likely to have a high school degree or a GED by 21 years of age compared to youth who had not been in foster care (Courtney et al., 2007). Further, less than

one-third (30%) of foster care alumni had completed any college compared with more than half (53%) of a national sample of 21 year age olds (Courtney et al., 2007). In addition, 1 out of 6 19 year-old former foster care youth experienced substance dependence; and compared to the same-age peers, they had higher rates of criminal justice involvement such as arrest and incarceration in jail (Courtney et al., 2005). However, these negative outcomes may be preventable when foster care youth are resilient or have the ability to transcend adversities or difficulties and convert them into an opportunity for growth (Gillespie, Chaboyer, & Wallis, 2007).

#### 1.1.2 Operationalization of Resilience

Although resilience is generally defined as a dynamic process that incorporates positive adaptation under significant adversity (Luthar, Cicchetti, & Becker, 2000), there are many definitions of resilience across diverse contexts and different populations (Gillespie et al., 2007). Therefore, it is necessary to define resilience for transition-age foster care youth. Combining two key conditions of resilience – exposure to significant severe adversity and the achievement of positive adaptation despite the adversity (Fergus & Zimmerman, 2005) – and the social ecology perspective (Ungar, 2011), in this study, *resilience* is defined as positive developmental outcomes resulting from successfully navigating and negotiating the psychological, social, cultural, and physical resources in the context of transition to living independently among foster care youth (Masten, Best, & Garmezy, 1990; Ungar, 2011).

Remarkable differences in the reported prevalence of resilience can be observed across studies due to differences in the operationalization of resilience (Walsh, Dawson, & Mattingly, 2010). Therefore, measurement issues are important to consider for resilience studies (Walsh et al., 2010). Measuring resilience has been problematic for the following reasons: (1) different disciplines have defined resilience differently; (2) diverse contexts and age have affected the measurement of resilience; and (3) the predominant use of qualitative methods has led to a lack of quantitative measurement of resilience (Gillespie et al., 2007). Many studies in child maltreatment have operationalized resilience as functioning in a single domain without taking functioning across multiple areas of competence into account (Walsh et al., 2010). However, it is important to look at resilience across different domains of functioning (Kinard, 1998; Luthar, et al., 2000; Masten & Coatesworth, 1998) because resilience cannot be assessed by a single outcome given the complexity of risks and adversities experienced by children in the child welfare system (McGloin & Widom, 2001).

In many studies, peer attachment, academic achievement and performance, and behavioral and emotional regulation are considered as resilience domains in childhood; in adolescence, resilience typically includes presence or absence of stage-salient problem behaviors (e.g., substance abuse, delinquency/criminality, suicidal ideation/ attempts), academic performance, and social skills (Luthar et al., 2000; Walsh et al., 2010). In the research area of foster care youth aging out, studies of resilience have examined positive adaption for living independently such as education, employment, housing, and no involvement in

criminal justice and early parenthood (Daining & Depanfilis, 2007; Gardner, 2008; Jones, 2012; Powers et al., 2012; Sherman, 2004).

Although most studies with transitioning youth focused on single domains of positive adaption, two studies measured multiple domains of resilience. Daining and Depanfilis (2007) used a composite score of six outcome domains: education; employment; and avoidance of early parenthood, homelessness, drug use, and criminal activity. Jones (2012, 2013) measured the outcomes of employment, education, connectedness to adult life, housing, avoiding substance abuse, no contact with the criminal justice system, optimism, and preparedness to create a composite score to represent resilience. To operationalize resilience as completely as possible, this dissertation examined multiple domains of developmental functioning (discussed below and in the Method Chapter) among foster care youth.

In addition, resilience is not a static trait of an individual, which means that resilience is not a quality of an individual (Fergus & Zimmerman, 2005). Individuals rather demonstrate resilience in their behavior and life patterns (Masten & Powell, 2003, p. 4). Therefore, resilience is expected to change depending on the ages and development of individuals (Masten & Powell, 2003) and one-time measurement of resilience is not truly valid (Fergus & Zimmerman, 2005). Because new domains of competence become salient as individuals become older, assessing both current and emerging domains is important in the longitudinal study of resilience (Masten & Powell, 2003). Changes in resilience

among foster care youth over time during the transition period need to be examined.

### 1.1.3 Resilience, an Asset for Transition-Age Youth

Aging out of care is an important turning point in the lives of foster care youth confronting adulthood. Transition-age youth have to move on to a new beginning, a completely different life focused on ending care and new roles for living independently as an adult (Dima & Skehill, 2011). At the same time, long-term consequences of abuse or neglect, being removed from their families, and living in foster care are on-going challenges for foster care youth that they have to overcome to be successful in adulthood (Child Welfare Information Gateway, 2013). For these transition-age youth, resilience can be a significant asset in dealing with difficulties during the transition to adulthood.

Individuals identified as resilient are confident about their ability to overcome difficulties, make use of opportunities and resources around them, and are able to take positive actions in their lives because they view difficulties as learning opportunities (Werner, 1993; Werner & Smith, 2001). Resilient youth show high self-esteem, are stress-resistant, and are less vulnerable to significant adversity (Buckner, Mezzacappa, & Beardslee, 2003; Garmezy, 1994); therefore, they can achieve positive developmental outcomes in their lives (Edwards, Mumford, & Serra-Roldan, 2007).

All people have some level of resilience (Tusaie, Puskar, & Sereika, 2007). Youth in foster care often develop considerable resilience; they are able to adapt to their circumstances, cultivate healthy relationships, and exhibit positive

behaviors through academic achievement and leadership roles (Jim Casey Youth Opportunity Initiatives, 2012). Foster care youth can positively adjust to adulthood, demonstrating remarkably resilient adaptation (McGloin & Widom, 2001) and leaving care may be an opportunity for a positive turning point (Wade & Dixon, 2006). Therefore, it is important to study the resilience of transition-age foster care youth and to identify factors related to resilience in order to help foster care youth transition to living independently.

#### 1.1.4 Independent Living Programs

Independent Living Programs (ILPs) are designed to help foster care youth prepare for the transition to living independently and to improve positive adjustments after emancipation (Montgomery, Donkoh, & Underhill, 2006). Although all ILPs provide training, services, and programs to help foster youth achieve self-sufficiency, the types of services vary and may include daily life skills training, building self-esteem, financial assistance with college or vocational schools, transitional housing, etc. (California Department of Social Services, 2007). ILPs generally incorporate life skills for basic living and personal development (Montgomery et al., 2006; Naccarato & DeLorenzo, 2008). Although the specific skills targeted by ILPs vary, most of them focus on personal development and independent living skills supporting youth in employment, education, housing, and life skills such as finding and obtaining legal or community resources or budgeting (Montgomery et al., 2006; Powers et al., 2012).

*Legislation.* In 1985, U.S. federal legislation initially authorized Independent Living Programs for aging-out foster care youth under Title IV-E of the Social Security Act. In 1993, 70 million dollars per year of federal funding became available for states to provide services to transition-age youth 16 to 18 years old; states were required to provide an additional 25 million dollars (Sherman, 2004). The Foster Care Independence Act of 1999 created the John H. Chafee Foster Care Independence Program to respond to the limitations and ineffectiveness of the ILPs and doubled federal funding for independent living programs from 70 million dollars to 140 million dollars a year; it provides states much flexibility in operating programs designed to help youth in transition to living independently (Child Welfare League of America, n.d.).

According to the John H. Chafee Foster Care Independence Act, ILPs should be available for all children and youth who are likely to remain in foster care until the age of 18 and should help them prepare to live independently by the age of 18 (Casey Family Programs, n.d.; Nixon et al., 2005). The act also allowed former foster care youth between the ages of 18 and 21 to receive financial, housing, counseling, employment, education, and other services (Nixon et al., 2005) and extended Medicaid eligibility up to the age of 21 (Naccarato & DeLorenzo, 2008).

The Promoting Safe and Stable Family Amendments of 2001 added the Education and Training Voucher Program to the John H. Chafee Foster Care Independence Program; youth may be eligible for the voucher programs until the age of 23, as long as they are enrolled in a post-secondary educational program

(National Resource Center for Youth Development, 2013; Nixon et al., 2005).

The Fostering Connections to Success and Increasing Adoptions Act of 2008 was enacted to improve outcomes for foster care youth by encouraging states to allow youth to remain in foster care beyond the age of 18 when youth meet certain education, training, or work requirements (Child Welfare Information Gateway, 2013; Courtney, 2009; Emilie, 2008). Out of 50 states, 44 (88%) states currently allow youth stay in care beyond the age 18; the maximum age is 21 in 34 states, 19 in four states, 20 in three states, 22 in two states, and 23 in one state (National Resource Center for Youth Development, 2013).

*ILP Services.* The Chafee Education and Training Vouchers (ETV) Program provides vouchers of up to \$5,000 annually for youth who have been in foster care and who are currently enrolled in higher education and training (Foster Care to Success, n.d.). States may use voucher funds only to offer vouchers and handle administrative activities (e.g., salaries, expenses, and training of staff) necessary to provide the vouchers (Nixon et al., 2005). All 50 states offer vocational and educational training services to youth through state or county implemented programs; all states also provide an extended opportunity for youth to stay in care past age 18 to complete high school or a GED certificate or begin postsecondary education or vocational programs (Gardner, 2008; Sherman, 2004).

Many states also provide college scholarships to youth in transition and more than 40 states provide employment services such as job readiness training and job-search assistance, and some also provide help with job placement and on-going support (Gardner, 2008). Although federal legislation requires states to

provide independent living services to youth ages 16 to 21, states can offer services beyond this age range and the eligible ages for services vary from 14 to 25 years old depending on state policies and programs.

Despite the legislation and policy tools to promote transitional support for foster youth, ILPs have not been available for all foster care youth who need to be prepared for being on their own. For example, states can use only up to 30% of federal funds to provide room and board for youth in transition to living independently (Gardner, 2008); therefore housing programs are limited because of high costs and lack of available, suitable housing. In a recent longitudinal study that examined adult functioning of 732 foster care alumni between the ages of 23 and 24 in three states, more than one-third of them indicated that there were trainings or assistance that they wished to receive but did not receive while in foster care (Courtney, Dworsky, Lee, & Raap, 2010). Although the youth generally reported a need for training in independent living skills, some of them reported that they had never received independent living skills training as foster care youth (Courtney et al., 2010).

Among foster care youth, transition experiences from care to adulthood vary across states due to differences in eligibility for extended foster care and differences in the provision of independent living or transitional services (Dworsky & Havlicek, 2009). In addition, there has been little research on the effectiveness of ILPs. The studies that have been done lacked a rigorous study design (Mongtomery, Donkoh, & Underhill, 2006) and rigorous program evaluation is still at the initial stage (Courtney, Zinn, Koralek, et al., 2011).

Therefore, it is important to examine whether ILPs help transition-age foster care youth adapt positively to independent lives after exit from foster care.

## 1.2 Conceptual Framework: The Social Ecology of Resilience

Although resilience is defined by the overall context in which it occurs (Fergus & Zimmerman, 2005), most resilience-related studies have focused on only one or two protective factors at multiple levels of influence (Ungar, 2011). Bronfenbrenner's (1979) ecological model suggests nested levels of influences on individuals: (1) individual domains, (2) micro-level domains such as family, peers, and school, (3) meso/exo-level domains such as neighborhood, and (4) macro-level domains such as society and culture. Building on Bronfenbrenner's ecological model, Ungar (2011) conceptualized the social ecology of resilience.

According to Ungar (2011), positive adaptations under significant adversity are influenced by interactions between individuals and their ecological systems. Therefore, Ungar's model captures all sources of influences on individuals' resilience including their exosystems and macrosystems (e.g., institutional environments, services, policies, and cultures), which have been understudied in resilience research and are less understood than resources at the individual and micro-level systems (Boyden & Mann, 2005; International Federation of Red Cross and Red Crescent Societies, 2004; Panter-Brick & Eggerman, 2012).

Risk factors increase the likelihood that a negative outcome occurs whereas protective factors decrease the likelihood of a negative outcome and moderate the effects of risk factors (Durlak, 1998). Risk and protective factors

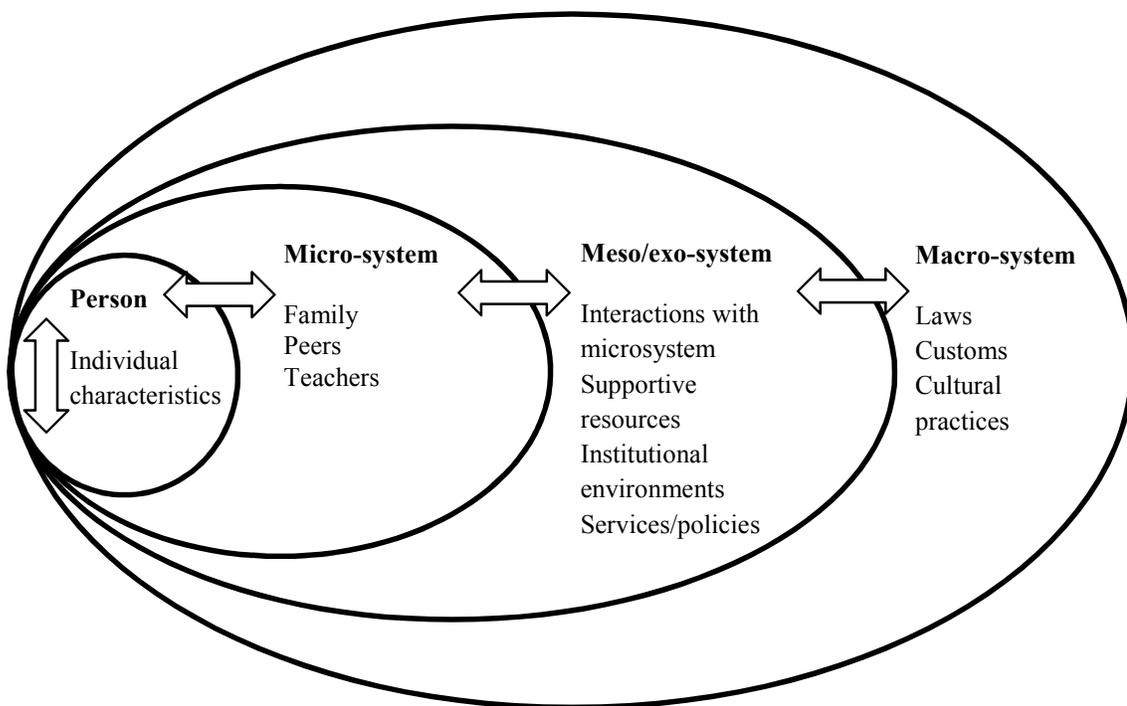
exist at all levels within the systems, meaning that characteristics of individuals, peers, families, communities, societies, and cultures all could be risk or protective factors (Fergus & Zimmerman, 2005; Ungar, 2011).

From this social ecology perspective, development of resilience among foster care youth in transition involves interactions between risk and protective factors (Fergus & Zimmerman, 2005; Ungar, 2011). The interactions among the multiple risk and protective factors influence foster youth's transition over time and ultimately become linked to resilience outcomes (Gillespie et al., 2007). Borrowing from the ecological framework of Bronfenbrenner (1979), Tol, Jordans, Kohrt, Betancourt, and Komproe (2013) suggested a resilience framework for children in significant adversity, being affected by political violence. They emphasized the importance of environmental influences at different levels in which children are nested.

The resilience framework by Tol et al. (2013) focused on transactional relationships between risk and protective factors at different social ecological levels of children in adversity. According to Tol and the colleagues, a child is nested in a microsystem that consists of direct activities, roles, and interpersonal relationships in a particular setting such as home or school. Interrelations among the settings are included in the child's mesosystem. The mesosystems are nested in the exosystem, which the child does not actively participate in, but the child is influenced by. Lastly, the macrosystem characterizes consistencies in the form of culture or subculture that pervades the other systems (p.12).

As suggested in Figure 1.1, which is adapted from the one for children in adversity settings (Tol et al., 2013), foster youth in transition develop and adapt to living independently by being influenced by various risk and protective factors at nested levels of their environmental systems.

*Figure 1.1. A Social Ecology of Resilience Framework for Transition-Age Youth<sup>1</sup>*



The social ecology of resilience conceptualizes that resilience can be supported by increasing or strengthening protective factors (Jim Casey Youth

<sup>1</sup> Adapted from a social ecological framework resilience for children in conflict settings; arrows indicate interactive processes across systems (Tol et al., 2013).

Opportunities Initiative, 2012). Environmental change through social and educational interventions can build resilience by strengthening protective factors among individuals at risk (Reynolds & Ou, 2003; Ungar, 2012). ILPs are designed to assist transition-age foster care youth and some studies suggest a positive relationship between participation in ILPs and resilience outcomes (Courtney, Zinn, Johnson, et al., 2011; Jones, 2012; Reilly, 2003; USDHHS, 2008). Therefore, ILPs may serve as a protective factor, interacting with other levels of factors. In this study, the role of ILPs on resilience, and other risk and protective factors of resilience is examined in the social ecological context of foster care youth in transition.

### 1.3 Purpose Statement

The overall purpose of this research is to examine the relationship between ILPs and resilience among transition-age foster care youth. Specifically, the study aims to: (a) examine the impact of different ILPs on resilience among foster youth and (b) investigate if ILP participation is a significant protective factor for changes in resilience regardless of the type of ILPs, after accounting for other individual, social, and environmental factors.

### 1.4 Summary

An estimated 20,000 youth age out of foster care every year (Foster Care Alumni of America, n.d.; McCoy-Roth et al., 2010). ILPs are designed to help these aging out foster care youth prepare for living independently. However, limited rigorous examinations have been done. Therefore, this study aims to

examine resilience outcomes of foster youth in three different ILPs using secondary analysis of data from a longitudinal experimental design study. Furthermore, it also examines whether participation in ILPs significantly predicts changes in resilience controlling for other individual, social, and environmental factors among transition-age foster care youth. From a review of the literature, relationships between resilience outcomes and individual, social, and environmental factors are examined. The results of the literature review and the social environmental model examined in this study are presented in the next chapter.

## CHAPTER 2: LITERATURE REVIEW

This chapter presents a review of the empirical studies that provided support for the present study. The social ecology of resilience guided exploration of various factors of resilience outcomes among transition-age foster care youth. First, outcomes of ILPs and relationship between ILP participation and resilience outcome are presented. Next, factors identified as being related to resilience outcomes are presented by the following levels of the social ecology: individual factors, micro-system level factors, meso/exo-system level factors, and macro-system level factors.

### 2.1 Search Strategy

Given the diversity of definitions and measurement of resilience, several terms were included in the category of resilience: coping, adjustment, adaptation, and adaptability. Two separate consultations with two professional librarians were made in order to obtain guidance in identifying target databases and key search terms.

Subject terms in three categories (target population, independent variable, and dependent variable) were used for the search with Boolean operators: (1) (foster\* OR foster care) AND (young adult\* OR youth OR child\* OR adolescen\* OR teen\*) AND; (2) support OR social support OR system support OR independent living\* OR family support OR social network AND; (3) resilience OR resilient OR adaptation OR adaptability OR adjustment OR coping. Five scholarly databases (CINAHL, ERIC, PsycINFO, SocINDEX, and Web of

Science) were searched in March 2016; the first step of searches through the databases was limited to “English”, “journal article”, and “from 1999 to 2016”; a geographical limit (USA) was added and applied for search in Web of Science. Studies that were published between January 1999 and November 1999 were excluded considering the date of enactment of The Foster Care Independence Act of 1999 (December).

The subject term, “Independent Living Program,” was used for additional searches using Google Scholar and the University of Maryland Baltimore One Search that includes over 50 different databases. In addition, articles related to the social ecology of resilience were also searched through One Search and Google Scholar. A search was conducted via the Google search engine to find statistical reports, policy reports, and other information on foster care youth. Reports on the outcomes of the Multi-Site Evaluation of Foster Youth Programs were additionally searched through the Google search engine and reviewed because this dissertation used data collected from that project.

## 2.2 Independent Living Programs and Positive Adaptation

### 2.2.1 Outcomes of ILPs

It has been more than 15 years since the Foster Care Independence Act of 1999 but only a few studies on the effectiveness of ILPs have been published. Four empirical studies that directly evaluated adult functioning outcomes of ILPs are included in this review. Kroner and Mares (2009) examined outcomes of 455 transition-age foster care youth in a housing-based ILP at discharge with a cohort design; the same authors later (2011) examined outcomes specifically related to

housing among 367 youth, a subsample of the earlier study. Lemon, Hines, and Merdinger (2005) examined the role of ILPs among foster care alumni who were in college, comparing 81 former foster care youth who had an ILP with 113 others who did not have an ILP. In the study, the characteristics of the ILPs were not specified but independent living skills taught to them while they were in foster care were compared between the two groups. Using a quasi-experimental design, Georgiades (2005) compared outcomes of 49 youth (ages 18-21) in ILPs to outcomes of 18 without ILPs; the 49 youth in ILPs had life skills training ILP, aftercare service ILP, subsidized ILP, or a combination of them. The life skills training ILP consisted of classes that cover life skill competencies in employment, money management, community resources, communication, and decision-making/problem solving. The aftercare service ILP provided housing assistance, including rent and mortgage payments, for former foster youth ages 18 to 21. Lastly, the subsidized ILP allowed foster youth ages 16 or older who attended school full-time and worked part-time to live in an approved setting and provided monthly stipends (Georgiades, 2005).

The studies measured outcomes of ILPs in separate domains such as education, employment, and housing. Foster youth with ILP experience have generally reported favorable outcomes in education; they were more likely to complete high school or obtain a GED (Georgiades, 2005; Kroner & Mares, 2009) and began college earlier than those without ILP experience (Lemon et al., 2005). Foster care youth who received ILPs were more likely to have full- or part-time jobs than those who did not receive an ILP (Georgiades, 2005) and when foster

care youth stayed more than six months in the housing-based ILP, they were more likely to be employed or in vocational trainings at discharge (Kroner & Mares, 2009). Lemon et al. (2005) reported that among foster care alumni who were in four-year colleges, youth who did not have ILPs were more likely to have a job right after their exit from foster care compared to those who had ILPs. However, the finding may have been affected by student status (full-time or part-time), which was not examined in the study. Foster care alumni who did not have ILPs may also have had to work to support their education.

There have been inconsistent findings on the outcomes of housing/homelessness and criminal justice involvement among foster care youth in previous studies. For housing, youth in the ILP group were more likely to own or rent independent housing than those in the non-ILP group in the study of Georgiades (2005) and Kroner and Mares (2009) found that foster care youth in a housing ILP that provided payments for housing (e.g., rent, deposit, bills, etc.) and a weekly stipend were more likely to be independently housed at discharge when they stayed in the program longer than 6 months. On the other hand, studies did not find a significant association between homeless experience and ILP experience (Georgiades, 2005; Lemon et al., 2005). Finally, youth in the ILP group were less likely to be arrested than those in the non-ILP group in one study (Georgiades, 2005) whereas Lemon et al. (2005) found no significant difference in criminal justice involvement between the ILP and non-ILP groups.

In relation to mental health and independent living skills, mixed findings have been reported. Georgiades (2005) found that youth in the ILP group had

greater ability to control their anger than those in the non-ILP groups but there was no significant difference in their level of depression, alcohol use, and drug use. Lemon et al. (2005) also did not find significant differences in mental health service use between the ILP and the non-ILP groups. In terms of parenting or pregnancy, Georgiades (2005) found that youth in the non-ILP group had more children than those in the ILP group but there were no differences between the groups in terms of their level of parenting competence or independent living skills. However, Lemon et al. (2005) found a significantly higher percentage of the ILP youth were able to perform basic living skills they were taught in foster care (e.g., opening a bank account, money budgeting, finding a place to live, setting and achieving goals, asking people for help, and finding opportunities for training and education) compared to youth in the non-ILP groups.

### 2.2.2 Outcomes of the Multi-Site Evaluation of Foster Youth Programs<sup>2</sup>

This dissertation uses data on outcomes of three<sup>3</sup> ILPs included in the Multi-Site Evaluation of Foster Youth Programs (Courtney, Stagner, & Pergamit, 2013). The Multi-Site Evaluation of Foster Youth Programs examined outcomes of foster care youth in different types of ILPs (a life-skill training ILP, the Independent Living–Employment Services Program, and the Massachusetts

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<sup>2</sup> Brief explanations of the study method for each ILP are presented to provide an understanding of outcomes; more specific information on the methods is available in Chapter 3.

<sup>3</sup> The project included four ILPs. However, this dissertation excluded one ILP (ESTEP-Tutoring) because the target ages of the sample are notably younger than the other three ILP programs and the main purpose of the program was improvement in reading and math skills rather than independent living skills.

Adolescent Outreach Program). Foster youth were randomly assigned to the treatment program or service-as-usual (SAU) group; each program was examined separately in a different study site (two in California and one in Massachusetts). Outcomes were measured at three times: (1) at referral and random assignment (i.e., baseline), (2) one-year after baseline assessment, and (3) two-years after baseline assessment. However, findings discussed below are based on comparisons between baseline and the two-year after baseline assessments. Because the ILP interventions were still ongoing at the first follow-up, only data from the second follow-up were used for the findings presented in earlier studies (DHHS, 2008).

The *Independent Living Life Skills Training (LST)* was examined among foster care youth in Los Angeles County, California. The study evaluated outcomes of 467 foster care youth ages 17 and older; 222 youth in the LST group received three-hour life skill trainings twice a week for five weeks and 245 youth in the SAU group received ILP services as usual but they did not receive any services from the LST program. Although youth in the LST group were less likely to receive financial assistance and were more likely to attend college than those in the SAU group at the second follow-up, no significant difference remained after adjusting significance levels using the Bonferroni and Benjamini-Hochberg adjustments to account for the possibility of false positive results (DHHS, 2008).

The *Independent Living–Employment Services (IL-ES)* program was examined using a sample of youth in Kern County, California. The program was available for foster care youth who were 16 years old and older; 136 youth in the

IL-ES group received services related to employment such as job search counseling and interview skills (Courtney, Zinn, Koralek, et al., 2011) and 118 youth in the control group received services as usual. Youth in the SAU group received ILP services as usual but they did not receive any services from the IL-ES program. No significant group differences in employment or self-sufficiency outcomes measured two years after baseline assessment were found (Courtney, Zinn, Koralek, et al., 2011; Zinn & Courtney, 2015).

The statewide *Massachusetts Adolescent Outreach Program* specifically targeted youth ages 16 and older in intensive<sup>4</sup> foster care. Ninety-seven youth in the outreach program received individualized services to achieve their goals for living independently. Youth in the Outreach program were more likely to be ever enrolled in college and to stay in college more than one academic year compared to the 97 youth in the SAU group. However, the association between participation in the Outreach program and college enrollment became non-significant after adjusting for remaining in care. Furthermore, there were no significant differences in employment, economic well-being, housing, delinquency, pregnancy, or self-reported preparedness for independence (Courtney, Zinn, Johnson, et al., 2011).

The Multi-Site Evaluation of Foster Youth Programs (Courtney, Stagner, & Pergamit, 2013) did not find compelling evidence of the impacts of ILPs. The researchers reported different outcomes depending on the types of ILPs

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<sup>4</sup> Intensive foster care (formerly known as therapeutic foster care) is for youth who are likely to have greater mental, emotional, and physical needs than other youth in foster care that may lead to problems in school or externalizing behavior (Courtney, Zinn, Johnson, et al., 2011, p.15).

(Courtney, Zinn, Johnson, et al., 2011, Courtney, Zinn, Koralek, et al., 2011; DHHS, 2008). Whereas the life skills training and Outreach programs showed some positive outcomes in financial functioning and education, no significant differences in outcomes were found for the IL-ES program versus services as usual.

### 2.2.3 Relationship between ILP Participation and Resilience Outcomes

Except the studies discussed above, positive associations between ILP participation and resilience outcomes were found in only two cross-sectional studies (Jones, 2012; Reilly, 2003). Reilly (2003) reported that when youth received more independent living services and more areas of training while in care, they were more likely to be satisfied with their current living arrangement and less likely to become involved in violations of the law.

Jones (2012) found a positive relationship between participation in the Transitional House, which is a residential education facility where the focus is on graduation from high school, and resilience. However, the significance was not maintained when other variables were included in a regression analysis (Jones, 2012). It may be possible that the impact of the Transitional House is a function of other social and environmental influences. Courtney, Zinn, Johnson, et al. (2011) suggested that factors from the social environment, for example, youth themselves, the family constellation, and the community, may moderate the effects of ILPs; however, they did not examine moderating effects.

## 2.3 Individual Factors and Positive Adaption

Individual factors refer to personal characteristics that an individual brings into any social situation, such as age, gender, skin color, physical appearance, mental and emotional resources, and development (Bronfenbrenner, 1994; Tudge, Mokrova, Karnik, & Hatfield, 2011). As identified in the literature reviewed, the individual characteristics that are associated with resilience outcomes include demographics, mental health, foster care experience, stress, life satisfaction, independent living skills, and religiosity.

### 2.3.1 Demographics

*Age.* Compared to younger youth, older foster care youth in transition demonstrate more positive adaptations. In the study of Kroner and Mares (2009), when foster care youth entered a housing-based ILP at the age of 19 or older, they showed more positive outcomes at discharge in education, employment, and independent housing than those who entered the program at a younger age. Jones (2013) found that older foster youth in transition were more likely to be resilient. In the studies of Daining and DePanfilis (2007) and Jones (2012), when foster care youth were older at discharge, they were more likely to be resilient after controlling for other individual and social environmental factors. In the study of Yates and Grey (2012), which identified four resilient profile groups (maladapted, resilient, internally resilient, and externally resilient) using scores of six domains of competence, youth in the externally resilient group were significantly older than those in the maladapted and internally resilient groups. The age of foster care youth is significantly associated with their resilience; the older they are at discharge, the more resilient they become.

*Gender.* Studies have reported inconsistent findings on the relationship between gender and resilience among foster care youth in transition. In a longitudinal study that examined relationships between natural mentoring and psychosocial outcomes among 339 older foster youth, male youth compared to female youth demonstrated lower levels of depression symptoms at the age of 18 and a half (Munson & McMillen, 2009). In the same study, male youth were more likely to use substances and to be arrested than females at the age of 19. Daining and DePanfilis (2007) found that female youth were more resilient than male youth whereas Jones (2012, 2013) and Yates and Grey (2012) did not find a significant association between gender and resilience. The relationship between gender and resilience outcomes requires further study.

*Race and Ethnicity.* Significant correlations between ethnicity and resilience were found in the studies of Jones (2012, 2013); White youth were less resilient than African Americans and Hispanics and African Americans were more resilient than Hispanics and others. However, the association between being White and resilience became non-significant when individual and social environmental factors were controlled (Jones, 2012). On the contrary, the relationship was significant after controlling for different social environmental factors in the other study by Jones (2013). It is possible that the increased sample size in the latter study ( $n = 91$ ) compared to the previous study ( $n = 76$ ) increased power to detect the relationship between being White and resilience. Whereas there was no significant association between race and resilient profile groups in the study of Yates and Grey (2012), Munson and McMillen (2009) found that

non-White youth demonstrated more negative psychosocial outcomes than White youth at the age of 18 and half. The inconsistent findings on the relationship between resilience outcomes and being White across the reviewed studies may be due to differences in measurements of resilience, race, and ethnicity; further examination of resilience among different race and ethnicity groups is needed.

### 2.3.2 Mental Health

Studies have found significant associations between behavior problems and resilience (Jones, 2012; Jones, 2013; Yates & Grey, 2012). Foster care youth were less resilient when they had more externalizing (Jones, 2012; Jones, 2013) or internalizing problems (Yates & Grey, 2012). However, the association was not significant when other individual and social ecological factors were accounted for in the two studies by Jones (2012, 2013). The findings of Jones' (2012, 2013) studies on the relationship between externalizing behavior problems and resilience need to be re-examined because it is possible that the small sample sizes (76 and 91 for each) made an existing relationship undetectable, considering the number of variables ( $n = 9$ ). No other studies examining mental health as predictors of resilience were found.

### 2.3.3 Experience of Foster Care

Two studies that examined relationships between foster care experience and resilience outcomes had different findings. Reilly (2003) found that youth with more foster care placements were more likely to become involved in violence, trouble with law, jail, pregnancy, and homelessness. However, Yates and Grey (2012) did not find any significant association among the four resilient

profile groups and child welfare experiences such as type of abuse (child abuse, parent drug use, child neglect, and other), maltreatment history (sexual abuse, physical abuse, emotional abuse, neglect, and domestic violence), years in care, and number of placements. Further research on the relationships between foster care experience and resilience is needed.

#### 2.3.4 Stress and Life Satisfaction

Stress and life satisfaction were found to be have significant associations with resilience. Less life stress was associated with more resilience controlling for other individual and social environmental factors in the study by Daining and DePanfilis (2007). In addition, in the study by Yates and Grey (2012), life satisfaction was significantly associated with resilience; resilient and internally resilient groups were more likely to be satisfied with their lives than maladapted and externally resilient groups.

#### 2.3.5 Independent Living Skills

Independent living skills were found to be positively related to resilience in the study by Jones (2012). When foster care youth in transition showed higher scores in independent living skills, they were more likely to be resilient controlling for other individual and social environmental factors. No other studies were found that examined the relationship between independent living skills and resilience.

#### 2.3.6 Spirituality/Religiosity.

In the study by Daining and DePanfilis (2007), spiritual support was not a significant predictor of resilience among African American youth; however, it

was a significant predictor among the overall sample of foster care youth in transition. It is possible that lack of statistical power due to reduced sample size may have caused the non-significant finding among the African American subsample in the study. Further examination of the relationship between religion and resilience is necessary.

#### 2.4 Micro-system Level Factors and Positive Adaptation

The microsystem refers to direct activities, roles, and interpersonal relationships in settings such as home and schools (Tol et al., 2013). As identified in the literature review, micro-level factors found to be associated with resilience outcomes are birth family, friends, mentors, and social network.

*Birth Family.* The direction of the relationship between resilience outcomes and support from the birth family is not consistent across studies. Merdinger et al. (2005) found that 80% of former foster care youth in four-year colleges had contact with their birth family. However, there was no significant difference found in family support between the resilient group and the currently symptomatic group among transition-age foster care girls with experience of sexual abuse in the study by Edmond, Auslander, Elze, and Bowland (2006). Jones (2012) found that youth living with their birth families were less likely to present resilience compared with youth not living with their birth family or youth with more frequent contact with their birth family, after controlling for other individual and social environmental factors. In the later study by Jones (2013), bivariate associations were found between lower resilience and more family support, more contact days with family, and living with family. In addition,

although youth in the sample tended to show higher levels of resilience when they had higher levels of family closeness, the relationship was not statistically significant in bivariate analysis. In a regression analysis, none of the factors relating to birth family were significant predictors of resilience. As stated above, the findings on the relationships between birth family and resilience are inconsistent across studies and therefore, need to be examined further.

*Friends.* Among former foster youth in four-year colleges, two-thirds (65.3%) had a friend to ask for help or advice (Merdinger et al., 2005). Edmond et al. (2006) found that youth in the resilient trajectories group were significantly more influenced by peers than those in the currently symptomatic group. Yates and Grey (2012) found that resilient youth who showed competencies across the six domains showed a significantly higher level of peer attachment than maladapted (low competencies across the six domains), internally resilient (high levels of psychosocial competency despite behavioral difficulties), and externally resilient (emotional difficulties despite manifest competence) youth. The two studies by Jones (2012; 2013) reported that the number of close friends was a significant predictor of resilience controlling for other individual and social ecological variables, meaning that youth with more close friends demonstrated higher levels of resilience.

Two studies examined support from family and friends together. In the study by Daining and DePanfilis (2007), support from family and friends was a significant predictor of resilience controlling for other variables for both the overall and African American samples. Yates and Grey (2012) found that resilient

and internally resilient youth had significantly higher levels of social support from family, friends, and significant others compared with maladapted and externally resilient youth. Across the studies, it was consistent that support from friends and family positively influenced resilience outcomes of foster youth in transition.

*Mentors.* Findings on the relationships between mentors and resilience outcomes have not been consistent across studies. In the study by Munson and McMillen (2009), having a non-kin natural mentor was a significant predictor of lower levels of stress and higher levels of life satisfaction after controlling for race/ethnicity, gender, and duration of relationship at age 18 and a half. In the same study, youth who had a long-term mentoring relationship were less likely to be arrested and demonstrated less stress at the age of 19 compared to those who did not have a mentor. Having an adult mentor other than a family member was significantly associated with positive asset related outcomes, for example, greater income expectations and having a bank account (Greeson, Usher, & Grinstein-Weiss, 2010). Ahrens et al. (2013) found that mentored youth showed higher levels of perceived general health and were more likely to participate in higher education controlling for gender, ethnicity, prenatal education level, parental income level, and neighborhood household income level. However, in Jones's (2013) study, having an adult non-family member as a mentor and resilience were not significantly related. These findings may suggest that a mentor could be influential to a specific domain of resilience such as education or housing but not overall resilience. Therefore, having a mentor as a protective factor of resilience

should be further examined in the social environmental contexts of foster care youth aging out.

*Social Network.* Although Reilly (2003) did not specify the sources of support, they found a positive relationship between social network and resilience outcomes. When youth had larger support networks, they were significantly more likely to be satisfied with their lives and less likely to be homeless (Reilly, 2003). Although Reilly (2003) suggests that having supports from one or more sources is positively related to resilience outcomes among transition-age foster care youth, more studies that report consistent findings on the relationship are necessary to support the effect.

## 2.5 Meso/exo-system Level Factors and Positive Adaptation

The meso- and exo-systems include factors related to interrelations between two or more microsystems (e.g., connection between parents and peers) in which foster youth live or factors related to larger systems (e.g., neighborhood) that foster youth may not directly interact with (Tol et al., 2013). As identified in the literature reviewed, foster care and community were associated with resilience outcomes.

*Foster Care.* Merdinger et al. (2005) reported that among former foster care youth who entered four-year colleges, 85% maintained contact with foster care parents or caseworkers. Collins, Spencer, and Ward (2010) found that foster care youth who had an adult mentor were more likely to complete high school or a GED, and less likely to be homeless. Among the mentors, 31% were child welfare professionals such as program staff and foster parents who were the most

recent connections before they left care. Courtney, Zinn, Johnson, et al. (2011) found that the magnitude of the relationship between participation in the Outreach program (which provides individualized case management services to achieve their goals for living independently) and college enrollment was reduced and became non-significant, when controlling for currently remaining in foster care. In further examinations, they found that the variance in college-related outcomes that was associated with remaining in foster care was much larger than the variance associated with Outreach participation. Although the study suggested the positive influence of being in foster care on education outcomes, it is possible that a common requirement of remaining in care, which is the enrollment in school or vocational trainings, may have served as a barrier to receive ILP services for youth in the Outreach program. They must be enrolled in school or vocational training to remain in foster care after the age of 18 (Courtney, Zinn, Johnson, et al., 2011).

Two studies by Jones (2012; 2013) reported that when foster care alumni had more contacts with foster parents, they were more likely to be resilient; however, the association was not significant controlling for other individual and social environmental factors in both studies. The role of foster parents and child welfare workers on resilience needs to be reexamined because whereas some studies suggest that they may have positive impact on resilience outcomes (Collins et al, 2010; Merdinger et al., 2005), the studies by Jones (2012, 2013) and Courtney, Zinn, Johnson, et al. (2011) suggest other social environmental factors may influence the relationships.

*Community.* Only one study (Jones, 2013) examined the relationship between community organization membership and resilience. When the foster care alumni had membership in any community organizations (e.g., athletic programs, social services/advocacy, academic clubs, or union membership), except church<sup>5</sup>, they were more likely to be resilient compared to those who did not, controlling for other social environmental factors.

## 2.6 Macro-system Level Factors and Positive Adaptation

The macro-system refers to consistencies in a culture or sub-culture that characterize the cultural or social context of different social groups such as social classes, ethnic groups, or religious affiliates (McLaren & Hawe, 2005; Tol et al., 2009). Religion was the only macro-system factor found in previous literature. One study by Edmond et al. (2006) compared religious affiliation or attendance at religious services between the resilient trajectories and currently symptomatic groups; however, the researchers did not find a significant difference between the groups. More studies are needed to examine the relationship between resilience and religion.

## 2.7 Gaps in the Literature

There has been lack of published studies that used experimental designs. Furthermore, findings on the effectiveness of ILPs have not been consistent.

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<sup>5</sup> The researcher (Jones, 2013) reported the rates of having a membership in a church for 2 years; however, the relationship between resilience and having a membership in a church was not reported.

Some studies reported favorable outcomes in some domains of resilience whereas other studies found non-significant differences and negative findings. This may have been caused by variation in the characteristics of ILPs, variation in the study design, or variation in outcome measures.

First, studies reported different outcomes depending on types of ILPs. The LST and Outreach programs were likely to show some positive outcomes in financial functioning and education. However, the IL-ES, LST, and Outreach did not demonstrate any significant difference in other resilience domains in the Multi-Site Evaluation of Foster Youth Programs study (Courtney, Stagner, & Pergamit, 2013). Additionally, studies that reported favorable outcomes of ILPs in some specific domains (Georgiades, 2005; Kroner & Mares, 2009, 2011) had limitations in internal validity due to the study designs (e.g., no comparison group, lack of random assignment). Therefore, more studies that examine the roles of ILPs across multiple domains, using an experimental design, are needed to examine the effectiveness of ILPs.

Second, studies also reported different results depending on domains of resilience. For example, studies found a positive influence of ILPs on education but not on employment. In addition, most studies examined one or more separate domains of resilience except the studies by Daining and DePanfilis (2007) and Jones (2012; 2013). Most studies were also limited to reporting immediate outcomes at discharge or one-time outcomes after exit or in care. Therefore, the studies could not capture change over time or new domains that would become salient over time (Masten & Powell, 2003).

Finally, whereas outcomes of ILPs have not been consistent across the impact studies, Jones (2012) and Courtney, Zinn, Johnson, et al. (2011) suggested that other individual, social, and environmental factors may influence the effect of ILPs. The significant association between participation in an ILP and resilience became non-significant when multiple social environmental factors were controlled for. Therefore, the impact of ILPs needs to be investigated in the social environmental context of transition-age foster care youth.

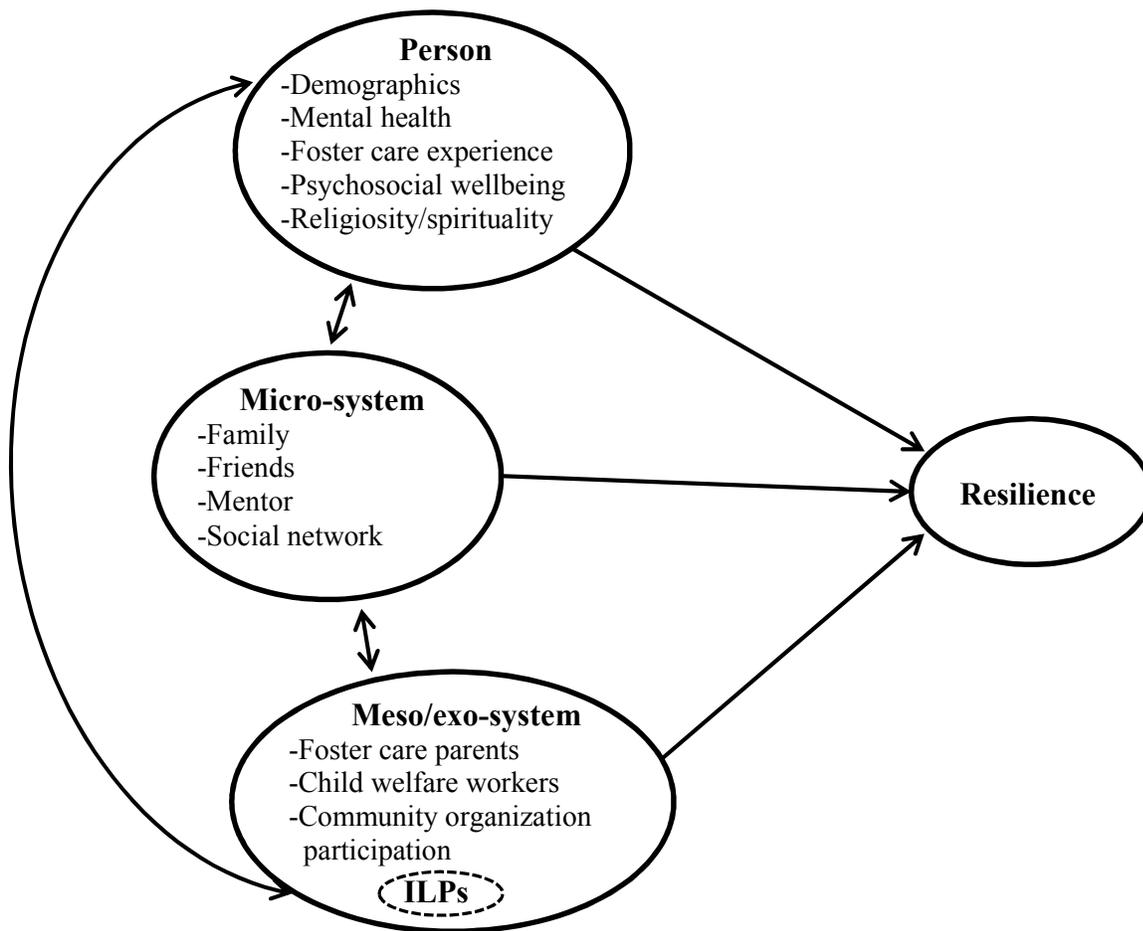
In addition, although various risk and protective factors across multiple social environmental domains were found to be associated with resilience outcomes, only three studies (Daining & DePanfilis, 2007; Jones, 2012; Jones, 2013) accounted for individual, social, and environmental factors and examined them as factors of resilience using multivariate analyses. The relationships between the factors and resilience outcomes are mostly limited to descriptive or bivariate relations without theoretical foundation. Those relationships need to be re-examined under a broader theoretical perspective in which multiple factors interact and influence resilience outcomes.

In conclusion, a study with a rigorous method is necessary to address the limitations of the previous studies on ILPs. First, outcomes of ILPs need to be examined in the social environmental context of foster care youth. Second, the outcomes need to be examined as resilience, which could be operationalized as a composite of multiple domains of developmental outcomes, over a long period of time. Lastly, advanced statistical analyses that can examine relationships between resilience outcomes over time and various factors are necessary.

## 2.8 Study Model

Based on the literature review, among transition-age foster care youth, individual, social, and environmental factors of resilience were examined. First, the literature review suggests that being White, internalizing/externalizing behavior problems, and life stress serve as risk factors for resilience at the individual level, whereas being older and female, life satisfaction, independent living skills, and spirituality/religiosity serve as protective factors. At the micro-system level, having supportive friends or mentors, and larger social networks could be protective factors whereas factors related to birth family (e.g., frequency of contact with birth family and living with birth family) could be risk factors. A higher number of foster care placements may be a risk factor that prevents foster youth positive development, but participation in ILPs, community organization participation, and contact with foster parents or child welfare workers were identified as protective factors at the meso/exo-system level. The risk and protective factors were expected to influence the relationship between ILP participation and resilience (Courtney, Zinn, Johnson, et al., 2011). Based on the literature review and the social ecology of resilience, the model tested in this study is presented in Figure 2.1. This study is specifically interested in how ILPs play a role in resilience in the social environmental contexts of foster care youth in transition to living independently.

Figure 2.1. A Social Ecology Model of Resilience



## 2.9 Research Questions and Hypothesis

Research questions were generated based on the social ecology of resilience and findings from the literature review. In order to examine the role of ILPs in the social environmental context of foster care youth in transition toward living independently, the following research questions were investigated:

2.9.1 Study Aim 1. To examine the impact of three ILPs on resilience among transition-age foster youth. Four specific research questions were examined to address this aim:

- Research Question 1. Is change in resilience for youth in the LST program significantly different than those in the SAU group over two years?
- Research Question 2. Is change in resilience for youth in the IL-ES program significantly different than those in the SAU group over two years?
- Research Question 3. Is change in resilience for youth in the Massachusetts Adolescent Outreach program significantly different than those in the SAU group over two years?
- Research Question 4. Is change in resilience for youth in the ILPs significantly different than those in the SAU groups over two years?

2.9.2 Study Aim 2. To examine the role of ILPs on resilience in the social-ecological environments of foster care youth in transition toward living independently. The following research question was examined to address this aim:

- Research Question 5. Is participation in ILPs a significant predictor of change in resilience over time after controlling for individual, micro-level, meso/exo-level, and macro-level factors?

## CHAPTER 3: METHOD

This chapter presents the study method of this dissertation including data source, study sample, procedures, measures, and analysis plan. With data from the Multi-Site Evaluation of Foster Youth Programs, this study examined changes in resilience after ILP participation among foster care youth over two years, and examined the role of ILPs on the changes in resilience, accounting for individual, social, and environmental factors in the context of foster care youth using multilevel modeling (MLM) analyses.

### 3.1 Data Source<sup>6</sup>

Secondary data from the Multi-Site Evaluation of Foster Youth Programs (Chafee Independent Living Evaluation Project, 2001-2010)<sup>7</sup> were used for this study. Using an experimental design, the project evaluated the impact of three different ILPs in California and Massachusetts. Transition-age foster care youth ( $N = 917$ ) who completed baseline assessment were randomly assigned to either the relevant ILP program or services as usual.

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<sup>6</sup> The information is described based on the user guide of the Multi-Site Evaluation of Foster Youth Programs (Larrabee, McCarthy, & Hughes, 2013).

<sup>7</sup> The project was funded by the Office of Planning, Research and Evaluation and the Children's Bureau, Administration for Children and Families, U.S. Department of Health and Human Services, Washington, D.C.; the data were collected by Courtney, Stagner, and Pergamit and distributed by National Data Archive on Child Abuse and Neglect (National Data Archive on Child Abuse and Neglect, 2013).

### 3.1.1 Instruments and Data Collection

Each site had different start and end dates between 09/28/2001 and 09/27/2010. Outcomes were measured at three times: (1) at referral and random assignment (i.e., baseline), (2) one-year after baseline assessment, and (3) two-years after baseline assessment. Interviewers asked questions and recorded responses on a laptop computer; audio computer-assisted self-interviewing was used for some sensitive questions<sup>8</sup>. An average time of approximately 100 minutes per interview was reported by the researchers (Courtney, Zinn, Johnson, et al., 2011; DHHS, 2008).

The Youth Questionnaire (Courtney, Stagner, & Pergamit, 2013) was used to assess outcomes. Questions on the Youth Questionnaire were adopted from four surveys: (1) the Midwest Evaluation of the Adult Functioning of Former Foster Youth; (2) the National Survey of Child and Adolescent Wellbeing (NSCAW); (3) the National Longitudinal Survey of Youth, 1997 cohort (NLSY97), and (4) the National Longitudinal Survey of Adolescent Health (AddHealth). Specifically, the Youth Questionnaire included questions about demographics, prior experiences in care, prior victimization, independent living and other services received, relationships, social support, reading ability, living arrangement, substance abuse, pro-social and other activities, mental health, attitudes and expectations, sense of preparedness, health behavior, sexual behavior, delinquency, physical health, fertility and family formation, and

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<sup>8</sup> The sensitive questions were not included in the study reports.

economic hardship or homelessness (Courtney, Stagner, & Pergamit, 2013). In addition to the Youth Questionnaire, some sites administered additional questions, which were specific to the programs (Courtney, Stagner, & Pergamit, 2013). For example, youth in the IL-ES program were asked about wages and a life skills assessment was administered to youth in the LST program.

### 3.1.2 Description of the Multi-Site Evaluation of Foster Youth Programs

Whereas ILPs include all types of services that are designed to assist current and former foster youth achieve self-sufficiency, this dissertation only includes programs that met the Multi-Site Evaluation of Foster Youth Programs inclusion criteria: (1) enrolled sufficient numbers of youth for an adequate sample size; (2) were reasonably stable and relatively intensive; (3) were grounded in well-developed theories of intervention; and (4) were consistently implemented (DHHS, 2008). In addition, only the three programs that provided services to transition age youth were included in this dissertation. Table 3.1 presents general descriptions for the three included programs.

Table 3.1. The Multi-Site Evaluation of Foster Youth Programs

|              | LST                                           | IL-ES                            | Outreach                   |
|--------------|-----------------------------------------------|----------------------------------|----------------------------|
| Site         | LA, CA                                        | Kern, CA                         | Massachusetts              |
| Sample size  | 469                                           | 254                              | 194                        |
| Age          | 17 or older                                   | 16 or older                      | 16 or older                |
| Eligibility  |                                               |                                  | Be in intensive care       |
| Intervention | 3-hour life skill training bi-weekly 10 times | One-on-one job search counseling | One-on-one case management |

The *Independent Living Life Skills Training (LST)*<sup>9</sup> study was conducted in Los Angeles County, California. One third of the state population resides in the county, 47% is Latino and 14% of families lived below the federal poverty level in 2004 (DHHS, 2008). During the period when the study was conducted, between 2003 and 2005, more than 5,000 youth were in supervised foster care placements and were 16 and older (DHHS, 2008).

Youth who reached their 17<sup>th</sup> birthday during the intake period or those who entered care during the intake and were 17 or older on the date of entry to care were included in the study; foster care youth who had severe learning disabilities or disruptive behavior problems were not eligible for the study. The participants were recruited from September 2003 to June 2004. Among 469 youth who completed the baseline assessment, 223 youth were in the LST group and 246 youth were in the SAU group. The response rates were 91% ( $n = 427$ ) at the first follow-up and 88% ( $n = 410$ ) at the second follow-up. Youth in the LST group received three-hour classes twice a week for five weeks (total of 10 classes) in 19 community colleges; the curriculum was based on seven state-adopted competency skill areas: education, employment, daily living skills, survival skills, choices and consequences, interpersonal/social skills, and computer/Internet skills (DHHS, 2008). Youth in the SAU group received ILP services as usual but they were not supposed to receive any services related to the LST. The LST program

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<sup>9</sup> The description is described based on Evaluation of the Life Skills Training Program Los Angeles County, California: Final Report (DHHS, 2008).

requires youth to attend seven classes out of 10. However, only 70% of youth in the LST treatment group attended at least one session and only 65% of youth completed all 10 classes. Sixty six youth in the SAU were identified that received the LST program; 25% of them attended at least one class and 23% of the youth graduated from the program, completing all 10 classes.

The *Independent Living-Employment Services (IL-ES)*<sup>10</sup> study was conducted with a sample of foster care youth under the guardianship of the Kern County Department of Human Services in California. Kern County is located in the southern rural area of California and only 2% of the state population resides in the county (Courtney, Zinn, Koralek, et al., 2011). Of the residents, 45% have Hispanic background and 20% are foreign-born (Courtney, Zinn, Koralek, et al., 2011). Between 2004 and 2008, the number of youth ages of 16 and older in foster care ranged from 295 to 322 (Courtney, Zinn, Koralek, et al., 2011).

Youth who became 16 years old or who entered care and were at least 16 years old between September 2003 and July 2006 were eligible for the study. Among the 254 randomly assigned youth who completed baseline assessments, 136 youth were in the IL-ES group and 118 youth were in the SAU. Among the participants at baseline, 90% ( $n = 229$ ) were retained at the first and second follow-ups. One-on-one job search counseling, preparation through six types of services (an initial visit and pre-assessment, job search preparation, job leads and

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<sup>10</sup> The information was described based on the information of Evaluation of the Independent Living – Employment Services Program, Kern County, California, Final Report (Courtney, Zinn, Koralek, Bess, Stagner, Pergamit, & Johnson, 2011).

resources, job search assistance, topical workshops, and retention services), and opportunities to build relationship with the IL-ES social service worker and to gain confidence in the employment interview setting were offered to youth in the IL-ES group.

By the second follow-up, almost 98% of youth in the IL-ES treatment group received a monthly newsletter on a variety of employment-related activities. Two-thirds of the youth received more intensive services, such as a phone call or home visit from an IL-ES social service worker, and about 20% received the most intensive services, for example, job assistance, shopping for interview, or workshop. In addition, when the researchers divided youth in the IL-ES treatment group into three groups based on the date of baseline interview, they found that service provision declined over the course of evaluation (Courtney, Zinn, Koralek, et al., 2011). 87% of youth in the early interview group ( $n = 45$ ) received more intensive services and 13% of the youth received most intensive services. Among youth in the middle interview group ( $n = 45$ ), 60% received more intensive services and 16% of them received most intensive services. Among youth in the late interview group, 52% received more intensive services and 13% of them received most intensive services. Eleven youth assigned to the SAU group received IL-ES services by the second follow-up. Among them, 9% received least intensive services; 5% received more intensive services; and 2% of them received most intensive services.

The *Massachusetts Adolescent Outreach Program for Youth in Intensive Foster Care*<sup>11</sup> was examined with youth in out-of-home placement under the guardianship of the Massachusetts Department of Children and Families. Massachusetts allows youth to stay in care past age 18; about 14% of the foster youth in the overall foster care population in Massachusetts were 18 and older in 2006. The program was implemented in various local contexts from rural areas to the Boston metropolitan area. The state population is approximately 83% White and in 2006, 88% had finished high school or higher education (Courtney, Zinn, Johnson, et al., 2011).

To be eligible for the study, youth had to be in intensive foster care and aged 16 and older between September 2004 and February 2007. Two hundred three youth were randomly assigned to either the outreach or control group. Among 194 youth who completed the baseline assessment, 97 youth were in the outreach group and the other half were in the control group. At the first follow-up, 93% ( $n = 181$ ) were retained and 92% ( $n = 179$ ) were retained at the second follow-up. Youth in the treatment group were paired with an outreach worker and received individualized services to achieve their goals (e.g., obtaining driver's license, applying for college, having medical insurance, ensuring housing stability). Other than one youth in the Outreach treatment group, 99% of them participated in the service by the second follow-up; 82% of them received

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<sup>11</sup> The description is based on the information of Evaluation of the Massachusetts Adolescent Outreach Program for Youth in Intensive Foster Care: Final Report (Courtney, Zinn, Johnson, Malm, Stagner, Pergamit, & McDaniel, 2011)

education assistance; 84% received employment assistance; 82% received money management assistance; 36% received housing assistance; and 59% received other services for independent living (e.g., training on meal planning).

Foster care youth under the guardianship of the Massachusetts Department of Children and Families can remain in foster care until the age of 23 and receive educational vouchers, state health insurance, and other services; however, it was not specified how long the study participants received the outreach services. In addition, youth in the SAU group were not expected to receive any services from the Outreach program; however, it is possible that they may have received similar services from other sources and up to 10 (9%) of the youth in the SAU group may have spoken with an Outreach worker (Courtney, Zinn, & Johnson, et al., 2011)

## 3.2 The Study Sample

### 3.2.1 Inclusion Criteria

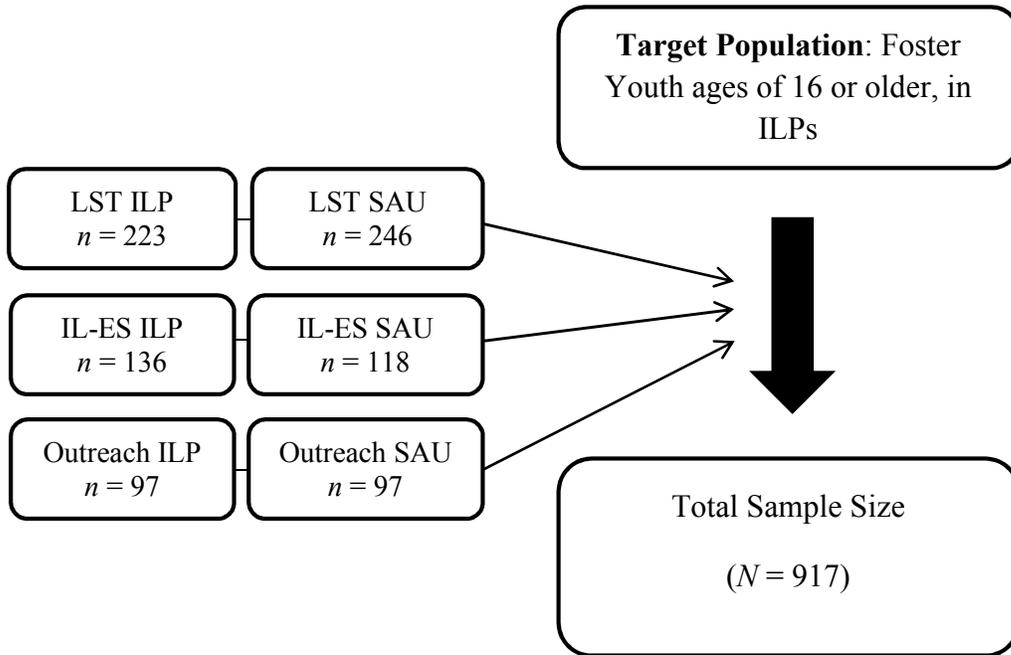
Three ILPs from the Multi-Site Evaluation of Foster Youth Programs were selected for this study because youth in the three ILPs meet the following conditions (see Figure 3.1): (1) transition-age foster care youth with ages of 16 to 21<sup>12</sup>, (2) presence of foster care youth with ILPs and those without ILPs, and (3) repeated measures of multiple resilience domains for a long period of time. A

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<sup>12</sup> Federal legislation requires states to provide independent living services to youth between the ages of 16 and 21.

final sample size of 917 in the intervention and SAU groups across the three ILPs was used for this study.

Figure 3.1. Sample Selection Flowchart



### 3.2.2 Overview of Sample

The ages of the youth in the study sample ranged from 16 to 20 years old; the mean age was 17.09 ( $SD = .78$ ) at the baseline assessments. Among the total number of 917, 60% ( $n = 547$ ) were female youth. More than one third (41%,  $n = 371$ ) of the youth identified themselves as Spanish, Hispanic, or Latino origin. Half of the youth were White (50%,  $n = 462$ ) and one-third (32%,  $n = 296$ ) were Black or African American. Six percent ( $n = 56$ ) of the youth identified as American Indian or Alaskan Native and 7% ( $n = 64$ ) selected two or more races and/or ethnicities. Statistical comparisons for demographics of the study groups are presented in Results Chapter.

### 3.3 Procedure

Data from the Multi-Site Evaluation of Foster Youth Programs (Courtney, Stagner, & Pergamit, 2013) are publically available through the National Data Archive on Child Abuse and Neglect. Access to the data files was delivered via an email with a link to a secure Box account in September 2013. A non-human subjects research review was obtained from the University of Maryland, Baltimore Institutional Review Board.

The Multi-Site Evaluation of Foster Youth Programs data consists of 12 files, three files for each ILP. The following steps were implemented with the data: (1) data from 9 files (for the three ILPs included in this dissertation) were merged into one dataset; (2) as part of data cleaning, missing data were addressed, including examining corrupt and inaccurate records; (3) study measures were examined through reliability tests and descriptive analyses; (4) statistical analyses were conducted for research questions using SPSS PASW Statistics 18 and Mplus 6.11 software; and (5) finally, the results of statistical analyses and implications were discussed.

### 3.4 Measures

#### 3.4.1 Primary Variables: ILP Participation and Resilience

Independent Living Program<sup>13</sup> is the independent variable that the current study examined. ILP participation was dichotomized into ILP and SAU groups,

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<sup>13</sup> ILP participation is one of the meso/exo-system level factors. However, it is separated from the other independent variables because ILP participation is the independent variable of primary interest in this dissertation.

not taking the types of ILPs into account. ILP group was coded 1 and SAU group was coded 0.

Resilience is the dependent variable in the current study. This study operationalized resilience by combining the six domains (education participation; employment history; and avoidance of early parenthood, homelessness, avoidance of drug use, and criminal activity) from the study by Daining and DePanfilis (2007) as well as two domains, optimism and preparedness for independent living, from Jones (2012, 2013). Questions and coding for each domain are presented in Table 3.2. Total resilience scores were calculated by summing the scores of the eight domains and the composite score could range from 0 to 16. Higher scores indicate more resilience.

When listwise deletion is used to handle missing data, it is possible to lose many respondents because resilience is a composite score of multiple domains that are measured with separate questions. Therefore, ipsative mean imputation was applied for youth who had data on at least six resilience domains (75%) at the first and the second follow-ups. Averaging data on available items is reasonable and equivalent to replacing missing items with the mean of a participant's own observed items (Enders, 2003; Schafer & Graham, 2002). When data are missing at random, ipsative mean imputation works better than listwise deletion (Roth, Switzer III, & Switzer, 1999) and has been found to work as well as regression mean imputation, hot-deck imputation (Huisman, 2000; Roth et al., 1999), and multiple imputation (Imai et al., 2014). Because resilience domains at baseline

were not missing at random, listwise deletion was used for calculation of baseline resilience scores.

Table 3.2. Resilience Domains and Scoring

| Domain     | Questions used                                                                                                                                                                                                                                                                                                                                                                                                        | Scoring                                                                                                          |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Education  | <p>Q1. Are you currently enrolled or attending regular school<sup>14</sup>? (Legitimate skips, which means that respondents graduated from school at the last interview, were coded as “No” at follow-ups).</p> <p>Q2. Other than the regular schooling, have you ever attended in the past 12 months any schooling, courses or training program designed to help people improve their skills or learn a new job?</p> | <p>2 : Yes for Q1</p> <p>1: Yes for Q2 among those who answered “No” to Q1</p> <p>0: No for Q1 and No for Q2</p> |
| Employment | <p>Q1. Are you currently working at a full or part-time job or jobs? (“Are you currently working for the employer from last interview?” at follow-ups)</p> <p>Q2. Have you been employed in the past 12 months? (“Besides your employment at the interview last time, have you done any work at all for an employer?” at follow-ups)</p>                                                                              | <p>2 : Yes for Q1</p> <p>1: Yes for Q2 among those who answered “No” to Q1</p> <p>0: No for Q1</p>               |

<sup>14</sup> Regular school is defined as one that offers an academic diploma or degree (e.g., elementary school, high school, college, graduate school, law school, or nursing program leading to an RN degree). Not included as regular school are training at a technical institute, license trade programs, etc. unless the credits obtained are transferrable to a regular school and could count toward an academic diploma or degree.

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|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Parenthood      | <p>Q1. Do you have children? (“Since we spoke at the last interview, have you given birth to/fathered any children?” at follow-ups)</p> <p>Q2. How many children do you have? (“Since that time, how many children have you given birth to/fathered?” at follow-ups; at the second follow-up, “yes” to the question “Are you currently pregnant?” are included into one child.</p>                                                                                                                                                                                                  | <p>2: No for Q1</p> <p>1: One child (included pregnant females with no children) for Q2</p> <p>0: Two or more children for Q2</p> |
| Homelessness    | <p>Which of the following best describes where you live right now...</p> <p>a. at a homeless shelter or emergency housing</p> <p>b. homeless</p> <p>c. on my own</p> <p>d. shared housing with a friend or roommate</p> <p>e. with my spouse, partner, or boyfriend, or girlfriend</p> <p>f. relatives who are also foster parents</p> <p>g. relatives who are not foster parents</p> <p>h. foster parents who are not unrelated</p> <p>i. friend’s family</p> <p>j. group home or residential facility</p> <p>k. biological parents</p> <p>l. adoptive parents</p> <p>m. other</p> | <p>2: c, d, &amp; e</p> <p>1: Other than a, b, &amp; c</p> <p>0: a &amp; b</p>                                                    |
| Substance abuse | <p>Q 1. In the past 12 months, have you used (alcoholic beverages, marijuana, amphetamines or any other stimulants, barbiturates, tranquilizers, any form of cocaine, hallucinogenic, sniffed glue, club drugs, heroin, prescription drugs without a doctor’s permission)?</p>                                                                                                                                                                                                                                                                                                      | <p>2: No for Q1</p> <p>1: Yes for Q1 &amp; Yes for Q 2</p> <p>0: No for Q 1 and Q 2</p>                                           |

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|                                     |                                                                                      |                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------|
|                                     | Q2. In the past 12 months, did you get any treatment for an alcohol or drug problem? |                                                                  |
| Criminal activity                   | Q1. In the past 12 months, have you been charged by the police with an offense?      | 2: No for Q1<br>1: Yes for Q1 & No court for Q2                  |
|                                     | Q2. As a result of these charges, did you go to juvenile or adult court?             | 0: Yes for Q1 & Juvenile or adult court for Q2                   |
| Optimism                            | I am always optimistic about my future.                                              | 2: Strongly agree<br>1: Agree                                    |
|                                     | Strongly disagree/ Disagree/ Agree/ Strongly agree                                   | 0: Strongly disagree/ disagree                                   |
| Preparedness for independent living | How prepared do you feel to live on your own?                                        | 2: Very prepared<br>1: Somewhat prepared/ Not very well prepared |
|                                     | Very prepared/ Somewhat prepared/ Not very well prepared/ Not at all prepared        | 0: Not at all prepared                                           |

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### 3.4.2 Individual Factors

Age of a participant was calculated from the date of birth and the date of service start. The date of birth subtracted from the date of service start is age used at baseline. Age was used as a continuous variable (skewness: .003; kurtosis: -.92).

Male gender was coded 1 and female was coded 0.

Race was asked as “Please select one or more of the following categories on this card to best describe your race” and there were five answer choices: (1) American Indian or Alaska Native, (2) Asian, (3) Black or African American, (4) Native Hawaiian or other Pacific Islander, and (5) White. This study categorized them into two groups (White vs. non-White) because being White was a

significant factor of resilience in the study by Jones (2013). White was coded 1 and the other four were coded 0.

Ethnicity was measured with the question, “Are you of Spanish, Hispanic, or Latino origin?”. Respondents who answered “Yes” to this question were coded 1 and those who answered “No” were coded 0.

Religiosity was measured using the question, “how important is religion or spirituality to you?” A 4-point scale was used to assess importance of religion (1 = *not important at all*, 2 = *only a little important*, 3 = *somewhat important*, and 4 = *very important*). It was normally distributed (skewness: -.85; kurtosis: -.43) and was therefore treated as a continuous variable.

Externalizing and internalizing behavior problems were assessed using the Youth Self-Report (YSR; Achenbach, 1991), which consists of 112 items with a 3-point scale (0 = *not true or not at all*, 1 = *sometimes or somewhat true*, and 2 = *very true or often*). The items ask if a respondent has experienced any of the target problems in the past 6 months. There are five behavior problem areas assessed and constructed by summing individual items (Achenbach & Rescorla, 2001): withdrawn/depressed (8 items), somatic complaint (10 items), anxious/depressed symptoms (13 items), rule-breaking behavior (15 items), and aggressive behavior (17 items). Externalizing behavior is a composite score of rule-breaking and aggressive behavior and internalizing behavior is a composite score of withdrawn, somatic complaints, and anxious/depressed symptoms. Following the manual (Achenbach & Rescorla, 2001), when missing responses to the problem items were 8 or fewer, scores were calculated with only available data, which means

that missing responses were treated as 0. Scores of four youth who were missing all of the items were not generated. In this dissertation, internal consistency reliabilities of each subscale were: .81 for anxious/depressed, .73 for withdrawn/depressed, .74 for somatic complaint, .76 for rule-breaking, and .81 for aggressive behavior. Internal consistency reliabilities for internalizing and externalizing behavior problems were .89 and .87, respectively. Both internalizing (skewness: 1.01; kurtosis: .97) and externalizing (skewness: .87; kurtosis: .62) behavior problems were normally distributed.

Number of foster home placements was assessed using the question, “How many foster homes have you been in since first entering the foster care system?” The responses ranged from 0 to 50. They were recoded into 6 categories based on the distributions (frequencies) of the responses (0 = 0, 1 = 1-3, 2 = 4-6, 3 = 7-9, 4 = 10-12, and 5 = 13 or more). Normal distribution of the variable was established after recoding and it was treated as a continuous variable (skewness: 1.5; kurtosis: 1.7).

Number of group home/residential treatment center/child caring institution placements was assessed using the question, “How many group homes or residential treatment centers or child caring institutions have you been in since first entering the foster care system?” The responses ranged from 0 to 20. Considering the distributions (frequencies) of the responses, responses of 5 or more were grouped into one. Therefore, scores range from 0 to 5. The variable was normally distributed (skewness: 1.21; kurtosis: .41) and treated as a continuous variable.

### 3.4.3 Micro-system Level Factors

Contact with birth mother was measured using the question, “about how often do you have any contact with your biological mother, either in person visits, phone calls, or letters?” There were six answer choices (1 = *never*, 2 = *not even once a month*, 3 = *once or twice a week*, 4 = *about once a week*, 5 = *several times a week*, and 6 = *every day*). When a youth’s mother died or they did not know if she died, the youth was included with “never” ( $n = 73$ ). Contact with birth mother was treated as a continuous variable (skewness: .31; kurtosis: -1.32).

Contact with birth father was measured using the question, “about how often do you have any contact with your biological father, either in person visits, phone calls, or letters?” There were six answer choices (1 = *never*, 2 = *not even once a month*, 3 = *once or twice a week*, 4 = *about once a week*, 5 = *several times a week*, and 6 = *every day*). When a youth’s father died or they did not know if he died, the youth was included with “never” ( $n = 120$ ). The level of measurement of this variable was continuous (skewness: 1.51; kurtosis: 1.02).

Friends support was operationalized based on two questions. If youth were younger than the age of 18, the question, “After you leave foster care, how likely is it that friends would offer you a place to stay for a while?” was used. The following question, “if you needed a place to stay, how likely is it that friends would offer you a place to stay for a while?” was used when 18 years old or older ( $n = 34$ ). A 4-point scale was used (1 = *not at all*, 2 = *somewhat likely*, 3 = *very*

*likely*, and 4 = *almost definitely*). The level of measurement of this variable was continuous (skewness: -.05; kurtosis: -1.14).

Mentor is defined as a significant adult other than a birth family member that youth can rely on (Collins et al., 2010; Greenson et al., 2010; Jones, 2013; Munson & McMillen, 2009). It was assessed using the following question, “Is there an adult outside your family who encourages you and believes in you?” The responses were dummy-coded (0 = *No* and 1 = *Yes*).

Social Support was operationalized using the following seven questions (Courtney, Zinn, Johnson, et al., 2011; DHHS, 2008): How many different people (1) can you count on to invite you to go out and do things?; (2) can you talk to about money matters like budgeting or money problems?; (3) give you useful advice about important things in life?; (4) give you help when you need transportation?; (5) can you go to when you need someone to listen to your problems when you’re feeling low?; (6) can you go to when you need help with small favors?; and (7) would you lend money in an emergency?. The responses ranged from 0 to 99 for each question. Internal consistency reliability among the seven items was .84 in this study. A summative scale of the standardized responses was used in the original evaluation studies; responses of the items were summed and the summed scores were standardized (Courtney, Zinn, Johnson, et al., 2011; DHHS, 2008).

However, in this dissertation, summed scores of raw responses were categorized into six groups because the summed standardized scores were not

normally distributed (skewness; 4.34, kurtosis; 30.61). The six groups were as follow: 1 = 0; 2 = 1 through 5; 3 = 6 through 10; 4 = 11 through 15; 5 = 16 through 20; and 6 = 21 and above. After recoding the responses, normal distribution of the summed total was established (skewness; 1.47, kurtosis; 2.36). The recoded summed total scores were used for analyses.

#### 3.4.4 Meso/exo-system Level Factors

Foster care parent support was assessed with the following four questions:

(1) thinking about all the help you've received in preparing for your future education, where did you receive this help?; (2) thinking about all the job-related help you've received, where did you receive this help?; (3) thinking about all the help you've received for handling your finances, where did you receive this help?; and (4) thinking about all the help you've received in preparing for daily living, where did you receive this help?. When youth responded "foster parent," the responses were coded 1, and the others were coded 0. Correlations between the four items were examined (see Table 3.3); they were all significantly associated with correlations between .26 and .43 ( $p < .01$ ). Total scores were created by summing the four items and could range from 0 to 4. The summed scores were normally distributed (skewness; .95, kurtosis; -.21) and Cronbach's alpha = .67 for the four items.

Table 3.3 Correlations among Items for Foster Care Parents Support

| Item | 2     | 3     | 4     |
|------|-------|-------|-------|
| 2    | .28** |       |       |
| 3    | .29** | .43** |       |
| 4    | .26** | .36** | .40** |

\*\* $p < .01$

Contact with social worker was measured based on the question, “how many times in the last twelve months did you have face to face visits with the social worker?” The answer could be 0 at minimum and 365 at maximum. When youth did not have a social worker ( $n = 29$ ) or did not know how often they saw their social workers ( $n = 12$ ), the cases were scored as 0. The responses were categorized into five groups and rescored, considering the distributions (frequencies) of the response (1 = 0, 2 = 1-10, 3 = 11-20, 4 = 21-30, and 5 = *more than 30*). The variable was treated as continuous and it was normally distributed (skewness: .66; kurtosis: 1.19).

Community participation was operationalized with the following question: “Do you belong to any organizations, clubs, teams, or groups?” The responses were dummy-coded (0 = *No* and 1 = *Yes*).

ILP Site was included in analyses as a control variable. The three sites were dummy-coded into a pair of dichotomous variables (0 = *No* and 1 = *Yes*). The reference group for each analysis is presented in the results.

Child welfare status was included as a control variable. At follow-up interviews, if youth still lived under the care and supervision of the child welfare system, it was coded 1. For youth who had been discharged from the care of the child welfare system, it was coded 0.

### 3.5 Data Analysis

The following section presents information on data cleaning, preliminary analyses, and analytic strategies for the research questions. Assumptions for all

analyses were checked during the data cleaning process. All the statistical analyses were conducted at an alpha level of .05.

### 3.5.1 Data Cleaning

From the one merged dataset, variables of interest were identified and extracted. Using descriptive statistics in SPSS PASW Statistics 18, data cleaning was conducted. Distributions were examined for all continuous variables. Absolute values of less than 3 for skewness and less than 10 for kurtosis indicate a normal distribution (Kline, 2011). The values of skewness and kurtosis were checked and when the absolute value for skewness was  $>3$  or the absolute value for kurtosis was  $>10$ , recoding was considered. During this data cleaning process, the final decision on levels of measurement of variables was made and recoding was done considering the distributions of data. Normal distribution for all continuous variables was established.

For data imputation, Little's MCAR test (Little, 1998) was first conducted to check if data were missing at random. If the test was significant, listwise deletion was used for missing data (e.g., resilience at baseline, social support). For MLM analyses, data were restructured in long form for research questions 1 to 4; and wide form data were used for research question 5 to include a time-varying covariate.

### 3.5.2 Preliminary Analyses

Using descriptive statistics and bivariate analyses, characteristics of the study sample are reported. A *t*-test was used to examine the relationship between ILP membership (ILP vs. SAU group) and resilience and each of the other

continuous variables. Values of Cohen's  $d$  are presented for effect sizes; the small, medium, and large effect sizes are .20, .50, and .80 (Cohen, 1992, p.157). To examine the association between the ILP membership and categorical variables (e.g., race, gender), chi-square analyses were used.

For comparisons between the three ILP sites on continuous variables, ANOVA (analyses of variance) was used. Three basic assumptions of ANOVA were first checked: (1) independence of observations, (2) normal distribution of dependent variable, and (3) homogeneity of variance. Independence of observation was assumed to be met based on the study design. Each variable was normally distributed as presented in the Measures section above. Homogeneity of variance was checked using Levene's test when the ANOVA test was conducted. When the assumption was met and the F test was statistically significant, Scheffe post hoc tests were used, which is often used in case of equal variances and different sample sizes among groups. When equal variance among groups was not met, the Welch test, which is a robust test of equality of means, was used (Tomarken & Serlin, 1986) and the Games-Howell post hoc tests were used to adjust for unequal variances and unequal sample sizes among groups. Values of  $\eta^2$  are presented for effect sizes; the small, medium, and large effect sizes are .01, .059, and .138 (Cohen, 1988).

Chi-square analyses were used to examine associations between the three ILP site groups and categorical variables. Pearson correlations were used to examine the linear relationships between continuous covariates and resilience.

Values of  $r$  indicate small (.10), medium (.30), and large (.50) effect sizes (Cohen, 1992).

### 3.5.3 Main Analyses

There are two study aims in this study. Study Aim 1 examines changes in resilience among two groups of foster youth in each ILP site. Study Aim 2 tests the effects of ILP participation controlling for individual, micro-level, meso/exo-level, and macro-level factors.

*Study Aim 1* is to examine the impact of three ILPs on resilience among transition-age foster youth. Multilevel modeling (MLM) was performed for the specific research questions.

- Research Question 1. Is change in resilience for youth in the LST program significantly different than those in the SAU group over two years?

Using MLM, resilience of youth in the LST program was compared to those in the SAU group at three different time points. There were two levels with the three time measures at the first level nested in individual youth at the second level. The dependent variable was resilience and the independent variable was group (LST vs. SAU).

- Research Question 2. Is change in resilience for youth in the IL-ES program significantly different than those in the SAU group over two years?

Using MLM, resilience of youth in the IL-ES program was compared to those in the SAU group at three different time points. There were two levels with the three

time measures at the first level nested in individual youth at the second level. The dependent variable was resilience and the independent variable was group (IL-ES vs. SAU).

- Research Question 3. Is change in resilience for youth in the Massachusetts Adolescent Outreach program significantly different than those in the SAU group over two years?

Using MLM, resilience of youth in the Outreach program was compared to those in the SAU group at three different time points. There were two levels with the three time measures at the first level nested in individual youth at the second level. The dependent variable was resilience and the independent variable was group (Massachusetts Adolescent Outreach vs. SAU).

- Research Question 4. Is change in resilience for youth in the ILP significantly different than those in the SAU groups over two years?

Using MLM, resilience of youth in the three ILP programs was compared to those in the SAU groups at three different time points. There were two levels with the three time measures at the first level nested in individual youth at the second level. The dependent variable was resilience and the independent variable is group (ILP vs. SAU).

*Study Aim 2* is to examine the role of ILPs on resilience in the social-ecological environments of foster care youth in transition to living independently. Multilevel modeling (MLM) was performed for the research question using Mplus 6.11.

- Research Question 5. Is participation in ILPs a significant predictor of change in resilience over time after controlling for individual, micro-level, meso/exo-level, and macro-level factors?

MLM allows for the identification of factors that predict changes in resilience (the dependent variable). There were three levels in the model: the three time measures at the first level were nested in individual youth at the second level; and individual youth at the second level were nested in the three ILP sites. Because of the small number of level three units, two-level random models with three-level analyses that adjusted for known latent classes with the syntax, “knownclass”, were used to control for possible dependence of observations among the individuals in the three ILP sites.

After examining an unconditional model to check the unconditional intraclass correlation (ICC) using long-form data, wide-form data were used to control for the time-varying variable, child welfare status. The relationship between changes in resilience and individual level factors was first tested. Next, changes in model fit and significance of the independent variable and covariates, adding micro-system level, meso/exo-system level, and macro-level factors incrementally, were examined.

## CHAPTER 4: RESULTS

This chapter presents the results of the data analyses conducted for this dissertation. First, characteristics of the study sample based on bivariate analyses are described. Second, results of analyses for each research question are presented.

### 4.1 Preliminary Analyses

This part examines characteristics of the study sample based on results of chi-square analyses, *t*-tests, and ANOVAs. Chi-square analyses and *t*-tests are used to present differences in the characteristics of the ILP and SAU groups. Chi-square analyses and ANOVAs are used to describe differences in the characteristics of three different ILP sites (LST, IL-ES, and Outreach). Analyses examining treatment versus SAU across the three ILP sites are presented as part of the multivariate analyses used for RQ1, RQ2, and RQ3 below.

#### 4.1.1 Comparisons on Categorical Variables between ILP and SAU Groups

Overall, approximately half (52%) of the youth were included in the ILP group, with 48% in SAU group. Results of chi-square analyses to compare the ILP and SAU groups are presented in Table 4.1. ILP and SAU groups demonstrated no significant differences in gender, ethnicity, race, mentor, and community participation. The overall sample was 60% male and 40% female, with approximately half of each assigned to the ILP and SAU groups. Forty one percent of the sample identified as Hispanic and this did not differ across the ILP

and SAU groups. Both ILP and SAU groups included the same number of youth who had a mentor ( $n = 414$ , 50%). Among youth who participated in a community organization, about 52% of them were in the ILP group.

Table 4.1 Results of Chi-square Analyses between ILP and SAU Groups

| Variables               | Total<br><i>n</i> (%) | ILP<br><i>n</i> (%) | SAU<br><i>n</i> (%) | Chi-square<br>value | <i>p</i> -value |
|-------------------------|-----------------------|---------------------|---------------------|---------------------|-----------------|
| Gender                  |                       |                     |                     |                     |                 |
| Male                    | 366 (39.9)            | 178 (48.6)          | 188 (51.4)          | .29                 | .59             |
| Female                  | 551 (60.1)            | 278 (50.5)          | 273 (49.5)          |                     |                 |
| Ethnicity               |                       |                     |                     |                     |                 |
| Hispanic                | 371 (40.8)            | 177 (47.7)          | 194 (52.3)          | 1.25                | .26             |
| Non-Hispanic            | 538 (59.2)            | 277 (51.5)          | 261 (48.5)          |                     |                 |
| Race                    |                       |                     |                     |                     |                 |
| White                   | 503 (42.1)            | 263 (52.3)          | 240 (47.7)          | 2.62                | .11             |
| Non-White               | 397 (39.4)            | 186 (46.9)          | 211 (53.1)          |                     |                 |
| Mentor                  |                       |                     |                     |                     |                 |
| Yes                     | 828 (90.4)            | 414 (50.0)          | 414 (50.0)          | .16                 | .69             |
| No                      | 88 (9.6)              | 42 (47.7)           | 46 (52.3)           |                     |                 |
| Community participation |                       |                     |                     |                     |                 |
| Yes                     | 240 (26.3)            | 124 (51.7)          | 116 (48.3)          | .49                 | .48             |
| No                      | 673 (73.7)            | 330 (49.0)          | 343 (51.0)          |                     |                 |

Additionally, changes in child welfare status between ILP and SAU groups are presented in table 4.2. At the first follow-up interview, one-third (32%,  $n = 270$ ) of youth were discharged from the child welfare system. There was no significant difference in distribution of discharged youth between ILP and SAU groups. At the second follow-up interview, discharged youth doubled to approximately two-thirds (65%,  $n = 530$ ) and there was a significant difference;

youth in the ILP group (40%) were more likely to remain in the child welfare system than youth in the SAU group (31%)

Table 4.2 Changes in Child Welfare Status between ILP and SAU Groups

| Variables                       | Total<br><i>n</i> (%) | ILP<br><i>n</i> (%) | SAU<br><i>n</i> (%) | Chi-square<br>value | <i>p</i> -value |
|---------------------------------|-----------------------|---------------------|---------------------|---------------------|-----------------|
| Child welfare status at time 2  |                       |                     |                     |                     |                 |
| Discharged                      | 270 (32.2)            | 121 (29.3)          | 149 (34.9)          | 2.93                | .09             |
| In-system                       | 569 (67.8)            | 291 (70.7)          | 278 (65.1)          |                     |                 |
| Child welfare status at time 3* |                       |                     |                     |                     |                 |
| Discharged                      | 530 (64.6)            | 245(60.2)           | 285 (68.7)          | 6.22                | .01             |
| In-system                       | 291 (35.4)            | 161 (39.8)          | 130 (31.3)          |                     |                 |

\*  $p < .05$

#### 4.1.2 Comparisons on Continuous Variables between ILP and SAU

##### Groups

To compare characteristics of ILP and SAU groups relating to continuous variables, *t*-tests are used. The results are reported in Table 4.3. At baseline, age was the only variable that showed a significant difference between ILP and SAU groups. Youth in the ILP groups were an average of .14 years (1.6 months) older than those in SAU ( $t = 2.83$ ,  $p = .005$ , Cohen's  $d = .18$ ).

At baseline, youth in the ILP and SAU groups did not differ in levels of religiosity, externalizing and internalizing behaviors, numbers of foster home and group home placements, amount of contact with birth mother and father, levels of friend and social support, and amount of contact with social worker. On average, youth reported religion was “somewhat important” ( $M = 3.08$ ;  $SD = 1.01$ ). Youth reported the mean scores of 12.6 ( $SD = 7.86$ ) and 13.21 ( $SD = 13.21$ ) for

externalizing and internalizing behavior problems, respectively. The scores are in the normal range; however, both scores are higher than the mean scores of national normative samples (9.95 for internalizing behavior and 9.85 for externalizing behavior problems, respectively; Achenbach & Rescorla, 2001, p. 218).

Table 4.3 Results of *t*-tests between ILPs and SAUs Groups

| Variable (valid <i>n</i> )           | Range | Total<br><i>M</i> ( <i>SD</i> ) | ILP<br><i>M</i> ( <i>SD</i> ) | SAU<br><i>M</i> ( <i>SD</i> ) | <i>t</i> | <i>p</i> -<br>value |
|--------------------------------------|-------|---------------------------------|-------------------------------|-------------------------------|----------|---------------------|
| Age (917) **                         | 16-20 | 17.09<br>(.78)                  | 17.02<br>(.78)                | 17.16<br>(.77)                | 2.83     | .005                |
| Religiosity (913)                    | 1-4   | 3.08<br>(1.01)                  | 3.09<br>(1.0)                 | 3.07<br>(1.03)                | -.37     | .71                 |
| Externalizing<br>behavior (913)      | 0-41  | 12.60<br>(7.86)                 | 12.73<br>(7.66)               | 12.46<br>(8.07)               | -.53     | .60                 |
| Internalizing<br>behavior (913)      | 0-48  | 13.21<br>(8.67)                 | 13.46<br>(8.70)               | 12.97<br>(8.64)               | -.84     | .40                 |
| N./foster home<br>placements (906)   | 0-5   | 1.65<br>(1.15)                  | 1.68<br>(1.12)                | 1.62<br>(1.18)                | -.80     | .43                 |
| N./group home<br>placements (907)    | 0-5   | 1.25<br>(1.55)                  | 1.35<br>(1.56)                | 1.16<br>(1.53)                | -1.85    | .07                 |
| Contact with birth<br>mother (909)   | 1-6   | 2.96<br>(1.78)                  | 3.02<br>(1.80)                | 2.90<br>(1.77)                | -1.00    | .32                 |
| Contact with birth<br>father (907)   | 1-6   | 1.88<br>(1.45)                  | 1.86<br>(1.43)                | 1.90<br>(1.47)                | .49      | .63                 |
| Friends support<br>(913)             | 1-4   | 2.61<br>(1.02)                  | 2.66<br>(1.03)                | 2.56<br>(1.0)                 | -1.40    | .16                 |
| Social support (901)                 | 7-42  | 18.15<br>(5.29)                 | 18.33<br>(5.39)               | 17.98<br>(5.18)               | -1.00    | .32                 |
| Foster care parents<br>support (913) | 0-4   | 1.08<br>(1.24)                  | 1.11<br>(1.27)                | 1.05<br>(1.21)                | -.81     | .42                 |
| Contact with social<br>worker (913)  | 1-5   | 2.64<br>(.83)                   | 2.62<br>(.84)                 | 2.66<br>(.82)                 | .67      | .50                 |

Youth had average scores of 1.65 ( $SD = 1.15$ ) and 1.25 ( $SD = 1.55$ ) for numbers of foster and group home placements, respectively. On average, youth contacted their birth mothers less than “once or twice a week” ( $M = 2.96$ ;  $SD = 1.78$ ) and contacted their birth father less than “not even once a month” ( $M = 1.88$ ;  $SD = 1.45$ ). Youth reported that they might have support from friends at the average level of 2.61 ( $SD = 1.02$ , between somewhat likely and very likely) when they have difficulty finding a place to stay. For social support, youth had a mean score of 18.15 ( $SD = 5.29$ ); youth had more than “1 to 5” numbers of people that could receive support. A mean score of 1.08 ( $SD = 1.24$ ) was reported for foster care parents support meaning that youth received help from foster care parents in at least one of four categories (education, job, handling finances, preparing for daily living) on average. Youth met their social workers at the average level of 2.64 ( $SD = .83$ ), or more than “1 to 10” times a year.

#### 4.1.3 Comparisons on Categorical Variables among the Three ILP Sites

Table 4.4 presents the results of chi-square analyses on the associations between categorical variables and three ILP sites (LST, IL-ES, and Outreach). Although there was no significant difference in gender distribution among ILPs, distributions of ethnicity, race, mentor, and community participation significantly differed for the three ILPs. Of the overall sample, 41% identified themselves as Hispanic; the Outreach program site was less likely to include Hispanic youth (27%) compared to the other two program sites, which both included more than 40% Hispanic youth. White youth were likely to be in the IL-ES (75%) and Outreach (73%) program compared to the LST (38%) program site.

Overall, 90% ( $n = 828$ ) of the youth had a mentor. Although in all three ILP sites, the majority of youth had a mentor, youth without a mentor were more likely in the LST (12%) program site. Overall, there were significant differences between the three ILP sites in rates of community participation; the IL-ES program site included fewer youth with community participation (21%) than the other two sites (28% for LST and 29% for Outreach).

Table 4.4 Results of Chi-square Analyses among the Three ILP Sites

| Variables                | Total<br><i>n</i> (%) | LST<br><i>n</i> (%) | IL-ES<br><i>n</i> (%) | Outreach<br><i>n</i> (%) | Chi-square<br>value | <i>p</i> -<br>value |
|--------------------------|-----------------------|---------------------|-----------------------|--------------------------|---------------------|---------------------|
| Gender                   |                       |                     |                       |                          |                     |                     |
| Male                     | 366 (39.9)            | 193 (41.2)          | 109 (42.9)            | 64 (33.0)                | 5.13                | .08                 |
| Female                   | 551 (60.1)            | 276 (58.5)          | 145 (57.1)            | 130 (67.0)               |                     |                     |
| Ethnicity***             |                       |                     |                       |                          | 20.36               | <.001               |
| Hispanic                 | 371 (40.8)            | 203 (43.8)          | 116(46.0)             | 52 (26.8)                |                     |                     |
| Non-Hispanic             | 538 (59.2)            | 260 (56.2)          | 136 (54.0)            | 142 (73.2)               |                     |                     |
| Race***                  |                       |                     |                       |                          | 120.63              | <.001               |
| White                    | 503 (55.9)            | 172 (37.9)          | 190 (75.1)            | 141 (73.1)               |                     |                     |
| Non-White                | 397 (44.1)            | 282 (62.1)          | 63 (24.9)             | 52 (26.9)                |                     |                     |
| Mentor*                  |                       |                     |                       |                          | 8.66                | .01                 |
| Yes                      | 828 (90.4)            | 410 (87.6)          | 238 (93.7)            | 180 (92.8)               |                     |                     |
| No                       | 88 (9.6)              | 58 (12.4)           | 16 (6.3)              | 14 (7.2)                 |                     |                     |
| Community participation* |                       |                     |                       |                          | 6.16                | .05                 |
| Yes                      | 240 (26.3)            | 133 (28.4)          | 52 (20.5)             | 55 (28.9)                |                     |                     |
| No                       | 673 (73.7)            | 336 (71.6)          | 202 (79.5)            | 135 (71.1)               |                     |                     |

Changes in child welfare status among the three ILP sites are presented in Table 4.5. At the first follow-up interview, 32% of overall youth were discharged from child welfare system. The LST site included 59% of youth still in the system compared with 81% in the IL-ES and 71% in the Outreach. At the second follow-

up, about 65% of the overall youth had been discharged from the child welfare system. Youth in the LST site were more likely to be discharged (76%) than youth in the IL-ES (58%) or Outreach (45%) sites.

Table 4.5 Changes in Child Welfare Status among ILP Groups

| Variables                         | Total<br><i>n</i> (%) | LST<br><i>n</i> (%) | IL-ES<br><i>n</i> (%) | Outreach<br><i>n</i> (%) | Chi-square<br>value | <i>p</i> -<br>value |
|-----------------------------------|-----------------------|---------------------|-----------------------|--------------------------|---------------------|---------------------|
| Child welfare status at time 2*** |                       |                     |                       |                          |                     |                     |
| Discharged                        | 270 (32.2)            | 176 (41.0)          | 43 (18.8)             | 51 (28.2)                | 35.56               | <.001               |
| In-system                         | 569 (67.8)            | 253 (59.0)          | 186 (81.2)            | 130 (71.8)               |                     |                     |
| Child welfare status at time 3*** |                       |                     |                       |                          |                     |                     |
| Discharged                        | 530 (64.6)            | 317 (76.6)          | 133 (58.3)            | 80 (44.7)                | 60.84               | <.001               |
| In-system                         | 291 (35.4)            | 97 (23.4)           | 95 (41.7)             | 99 (55.3)                |                     |                     |

#### 4.1.4 Comparisons on Continuous Variables among Three ILP Sites

ANOVAs were used to compare continuous variables for the three ILP sites (LST, IL-ES, and Outreach). Results are reported in Table 4.6; a + symbol after the *F* value in the table indicates variables that violated the homogeneity of variances assumption. There were no significant mean differences found in externalizing and internalizing behaviors or the amount of contact with birth mother and father. However, there was a significant difference in age at baseline among the three program sites ( $\eta^2 = .45$ ). Compared to the LST site, the mean age was 1.2 years younger for youth in the IL-ES site ( $p < .001$ ) and is .15 years younger for youth in the Outreach site ( $p = .03$ ). In addition, youth in the Outreach site were 1.05 years older than those in the IL-ES site ( $p < .001$ ). Religiosity was also significantly different among the sites ( $\eta^2 = .05$ ). Youth in the LST and IL-ES sites did not differ, but compared to the youth in the Outreach

site, youth in the other two sites thought religion was less important; the mean difference compared to the Outreach site was .57 ( $p < .001$ ) and .60 ( $p < .001$ ) on a 4-point scale for each group, respectively.

#### 4.6 Results of ANOVAs among ILPs

| Variable<br>(valid $n$ ; LST, IL-ES, Outreach)    | LST<br>$M (SD)$ | IL-ES<br>$M (SD)$ | Outreach<br>$M (SD)$ | $F$                 | $p$   |
|---------------------------------------------------|-----------------|-------------------|----------------------|---------------------|-------|
| Age***<br>(469, 254, 194)                         | 17.46<br>(.50)  | 16.26<br>(.56)    | 17.30<br>(.77)       | 419.00 <sup>+</sup> | <.001 |
| Religiosity***<br>(469, 254, 190)                 | 3.19<br>(1.00)  | 3.22<br>(.88)     | 2.62<br>(1.09)       | 22.74 <sup>+</sup>  | <.001 |
| Externalizing behavior<br>(469, 254, 190)         | 12.42<br>(8.02) | 12.56<br>(7.69)   | 13.06<br>(7.71)      | .45                 | .64   |
| Internalizing behavior<br>(469, 254, 190)         | 13.12<br>(8.72) | 13.56<br>(8.64)   | 13.00<br>(8.62)      | .29                 | .75   |
| N./foster home placements***<br>(462, 253, 191)   | 1.44<br>(1.05)  | 1.66<br>(1.09)    | 2.16<br>(1.29)       | 23.87 <sup>+</sup>  | <.001 |
| N./group home placements***<br>(461, 254, 194)    | .94<br>(1.50)   | 1.58<br>(1.49)    | 1.56<br>(1.57)       | 19.49               | <.001 |
| Contact with birth mother<br>(461, 254, 194)      | 3.04<br>(1.85)  | 2.84<br>(1.68)    | 2.93<br>(1.77)       | 1.04 <sup>+</sup>   | .36   |
| Contact with birth father<br>(459, 254, 194)      | 1.88<br>(1.44)  | 1.79<br>(1.35)    | 1.98<br>(1.59)       | .96 <sup>+</sup>    | .39   |
| Friends support*<br>(467, 254, 192)               | 2.51<br>(1.03)  | 2.74<br>(1.04)    | 2.67<br>(.96)        | 4.63                | .01   |
| Social support**<br>(457, 253, 191)               | 17.72<br>(5.26) | 19.17<br>(5.49)   | 17.83<br>(4.91)      | 6.23 <sup>+</sup>   | .002  |
| Foster care parents support***<br>(469, 254, 190) | .94<br>(1.25)   | 1.02<br>(1.05)    | 1.51<br>(1.36)       | 12.41 <sup>+</sup>  | <.001 |
| Contact with social worker*<br>(469, 254, 190)    | 2.66<br>(.76)   | 2.51<br>(.97)     | 2.75<br>(.76)        | 4.32 <sup>+</sup>   | .01   |

<sup>+</sup> Welch test for simple effect; Games-Howell post hoc test due to heterogeneity of variances.

For both numbers of foster home placements ( $\eta^2 = .06$ ) and group home placements ( $\eta^2 = .04$ ), there were significant mean differences among the three program sites. With an average of 2.16 foster home placements, youth in the Outreach group had significantly more placements than youth in the LST (1.44) and IL-ES (1.66) sites; the difference between the LST and IL-ES sites was small but significant ( $p < .001$ ). For the numbers of group home placements, whereas there was no significant difference between the IL-ES and the Outreach sites, youth in the LST site (.94) experienced fewer group home placements than youth in the IL-ES (1.58) and Outreach sites (1.56). The differences were statistically significant at  $p < .001$ .

There were significant differences found in supports from friends ( $\eta^2 = .01$ ). Compared to youth in the LST site, those in the IL-ES demonstrated .23 higher levels of support from friends ( $p = .02$ ) on a 4-point scale. However, there was no significant difference in supports from friends between the Outreach and the LST sites or between the Outreach and the IL-ES sites. There was also a significant difference in levels of social support ( $\eta^2 = .01$ ). Youth in the IL-ES site demonstrated 1.45 higher levels than those in the LST site ( $p = .002$ ) and 1.34 higher levels than those in the Outreach site ( $p = .02$ ). There was no significant difference in levels in social support between the LST and the Outreach sites. Significant differences in levels of support from foster parents among the program groups were also found ( $\eta^2 = .03$ ). Youth in the Outreach site demonstrated .56 higher levels than those in the LST site ( $p < .001$ ) and .49 higher levels than those in the IL-ES site ( $p < .001$ ) on a 5-point scale. The levels of support from foster

parents were not significantly different between the LST and the IL-ES sites. There was also a significant difference in the amount of contact with social workers ( $\eta^2 = .01$ ). Whereas youth in the Outreach site reported .24 (on a 5-point scale) more contact with social workers than those in the IL-ES site ( $p = .01$ ), the other comparisons between the IL-ES and the LST sites and between the LST and the Outreach sites, were not significantly different.

#### 4.1.5 Resilience Comparisons across Groups and Time

Resilience scores were examined across groups and time. Resilience scores could range from 0 to 16. On average, resilience scores were 10.61 ( $SD = 1.90$ ), 10.84 ( $SD = 2.05$ ), and 11.15 ( $SD = 2.28$ ) at time 1, time 2, and time 3, respectively. A series of  $t$ -test were used to examine whether the ILP and SAU groups differed on resilience at any of the three time points; there were no significant differences (see Table 4.7).

#### 4.7 Resilience Comparison between ILP and SAU Groups at Three Times

| Variable (valid $n$ ) | Range | Total<br>$M$ ( $SD$ ) | ILP<br>$M$ ( $SD$ ) | SAU<br>$M$ ( $SD$ ) | $T$  | $p$ |
|-----------------------|-------|-----------------------|---------------------|---------------------|------|-----|
| Resilience 1 (899)    | 5-16  | 10.61<br>(1.90)       | 10.56<br>(1.93)     | 10.66<br>(1.87)     | .72  | .47 |
| Resilience 2 (839)    | 2-16  | 10.84<br>(2.05)       | 10.86<br>(1.97)     | 10.83<br>(2.13)     | -.23 | .82 |
| Resilience 3 (821)    | 4-16  | 11.15<br>(2.28)       | 11.10<br>(2.26)     | 11.19<br>(2.31)     | .56  | .58 |

Using ANOVA tests, differences in resilience among three ILP sites across the three time points were examined (see Table 4.8). Although there were significant differences in resilience scores at baseline and the first follow-up, at the second follow-up, two-years after baseline, youth in the three ILP sites did not

differ in resilience scores. At baseline, there were significant differences in resilience scores among three ILP sites. With an average resilience score of 11.16, youth in the Outreach site demonstrated significantly greater resilience than youth in the LST (10.45) and IL-ES (10.50) sites. However, youth in the IL-ES and the LST sites did not significantly differ at baseline. At the first follow-up, one-year after baseline, there was also a site difference found in resilience scores.

Compared to youth in the LST site, youth in the IL-ES site demonstrated an average of .49 lower points on the resilience scale ( $p = .004$ ). There was no group difference found between the LST and the Outreach sites or between the IL-ES and the Outreach sites.

#### 4.8 Resilience Comparison among ILP Groups at Three Times

| Variable<br>(valid <i>n</i> ; LST, IL-ES, Outreach) | LST<br><i>M</i> ( <i>SD</i> ) | IL-ES<br><i>M</i> ( <i>SD</i> ) | Outreach<br><i>M</i> ( <i>SD</i> ) | <i>F</i>          | <i>p</i> |
|-----------------------------------------------------|-------------------------------|---------------------------------|------------------------------------|-------------------|----------|
| Resilience 1***<br>(458, 254, 187)                  | 10.45<br>(1.98)               | 10.50<br>(1.66)                 | 11.16<br>(1.91)                    | 9.64 <sup>+</sup> | <.001    |
| Resilience 2***<br>(429, 229, 181)                  | 10.63<br>(2.16)               | 11.12<br>(1.72)                 | 11.01<br>(2.11)                    | 5.48 <sup>+</sup> | .004     |
| Resilience 3<br>(414, 228, 179)                     | 11.21<br>(2.31)               | 11.08<br>(2.21)                 | 11.15<br>(2.31)                    | .42               | .66      |

<sup>+</sup> Welch test due to heterogeneity of variances.

Additionally, it was examined whether or not resilience scores were different between youth who were discharged from the child welfare system and those who were still in the system. All youth were in the system at baseline. At first follow-up, one year after the base-line interview, there was a significant difference ( $t = -4.55, p < .001, \text{Cohen's } d = .33$ ); youth in the system ( $M = 11.06; SD = 1.93$ ) had higher resilience scores than discharged youth ( $M = 10.38; SD =$

2.22). Likewise, at the second follow-up interview, youth in the system ( $M = 11.37$ ;  $SD = 2.20$ ) had significantly higher resilience scores than discharged youth ( $M = 11.02$ ;  $SD = 2.32$ ) although the mean difference was small ( $t = -2.17$ ,  $p = .03$ , Cohen's  $d = .15$ ).

#### 4.1.6 Association among Resilience Scores and Other Variables

Correlations were used to examine relationships between resilience and continuous variables and the results are presented in Table 4.9. Religiosity was positively correlated with resilience at all three time points; when youth thought religion was important, they were more likely to demonstrate resilience. However, the effect sizes were small at all three time points.

#### 4.9 Results of Correlation among Resilience Scores and Continuous Variables

| Variables                        | Resilience 1 | Resilience 2 | Resilience 3 |
|----------------------------------|--------------|--------------|--------------|
| Age                              | .02          | -.07         | .01          |
| Religiosity                      | <b>.08*</b>  | <b>.11*</b>  | <b>.10*</b>  |
| Externalizing behavior problem   | <b>-.33*</b> | <b>-.29*</b> | <b>-.24*</b> |
| Internalizing behavior problem   | <b>-.22*</b> | <b>-.11*</b> | <b>-.12*</b> |
| Number of foster home placements | .03          | <b>-.07*</b> | <b>-.07*</b> |
| Number of group home placements  | <b>-.07*</b> | <b>-.11*</b> | <b>-.11*</b> |
| Contact with birth mother        | .04          | -.04         | -.03         |
| Contact with birth father        | .03          | .03          | -.01         |
| Support from friends             | <b>.10*</b>  | .02          | .03          |
| Social support                   | <b>.11*</b>  | .07          | <b>.11*</b>  |
| Support from foster care parents | <b>.10*</b>  | <b>.11*</b>  | .04          |
| Contact with social worker       | .02          | .05          | <b>-.09*</b> |

\*  $p < .05$

Both externalizing and internalizing behavior problems were negatively associated with resilience scores at all three time points. Youth were likely to

demonstrate higher levels of resilience when they had lower levels of externalizing and internalizing behavior problems; however, the strength of the associations became smaller across time from baseline to the second follow-up. Both foster home and group home placement numbers were also negatively correlated with resilience scores. When youth had fewer foster home placements, they tended to report higher levels of resilience at both first and second follow-up times, but not at baseline. In addition, when youth had fewer group home placements, they tended to demonstrate higher levels of resilience at all three times. The effect sizes at both follow-up times were greater than the one at baseline but still small.

When youth had more support from friends, they were likely to report higher resilience at baseline but not at the two follow-up times. When youth had more social support, they also tended to demonstrate higher levels of resilience at baseline and the second follow-up, but the effect sizes were small. Support from foster care parents was positively associated with resilience at baseline and the first follow-up; the strength of the associations was small. However, at the second follow-up, when youth had more contact with their social workers, they were less likely to demonstrate resilience. It is possible that youth most in need (those with lower resilience) had more contact with the social workers; this finding must be interpreted with caution because the data do not support causal interpretation.

Using *t*-tests, relationships among resilience scores at the three different time points and categorical variables were examined. The results are presented in table 4.10. There were significant differences between male and female youth in

resilience scores; female youth demonstrated greater levels of resilience at all three times (Cohen's  $d$ s = .25; .20; .17). Hispanic youth presented significantly lower levels of resilience at both follow-up times (but not at baseline) compared to non-Hispanic youth (Cohen's  $d$ s = .15; .18).

#### 4.10 Resilience Comparisons among Categorical Variables

| Variables                      | Resilience 1<br><i>M (SD)</i> | Resilience 2<br><i>M (SD)</i> | Resilience 3<br><i>M (SD)</i> |
|--------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <b>Gender</b>                  |                               |                               |                               |
| Male                           | 10.33 (1.88)                  | 10.60 (2.12)                  | 10.90 (2.38)                  |
| Female                         | 10.80 (1.89)                  | 11.01 (1.99)                  | 11.30 (2.21)                  |
| <i>t (p-value)</i>             | -3.66 (<.001) ***             | -2.72 (.006) **               | -2.41 (.02) *                 |
| <b>Ethnicity</b>               |                               |                               |                               |
| Hispanic                       | 10.52 (1.80)                  | 10.66 (1.93)                  | 10.90 (2.33)                  |
| Non-Hispanic                   | 10.68 (1.96)                  | 10.97 (2.13)                  | 11.33 (2.25)                  |
| <i>t (p-value)</i>             | -1.28 (.20)                   | -2.21 (.03) *                 | -2.63 (.009) **               |
| <b>Race</b>                    |                               |                               |                               |
| White                          | 10.64 (1.90)                  | 10.87 (2.00)                  | 11.00 (2.30)                  |
| Non-White                      | 10.61 (1.88)                  | 11.00 (2.10)                  | 11.32 (2.26)                  |
| <i>t (p-value)</i>             | .17 (.87)                     | .28 (.78)                     | .94 (.05)                     |
| <b>Mentor</b>                  |                               |                               |                               |
| Yes                            | 10.65 (1.90)                  | 10.84 (2.05)                  | 11.18 (2.27)                  |
| No                             | 10.23 (1.83)                  | 10.81 (2.05)                  | 10.75 (2.33)                  |
| <i>t (p-value)</i>             | 2.00 (.048) *                 | .16 (.88)                     | 1.57 (.12)                    |
| <b>Community participation</b> |                               |                               |                               |
| Yes                            | 11.02 (1.85)                  | 11.24 (1.95)                  | 11.74 (2.33)                  |
| No                             | 10.46 (1.90)                  | 10.69 (2.07)                  | 10.93 (2.22)                  |
| <i>t (p-value)</i>             | 3.97 (<.001) ***              | 3.53 (<.001) ***              | 4.50 (<.001) ***              |

Youth with a mentor reported significantly greater levels of resilience at baseline compared to youth without a mentor (Cohen's  $d$  = .22); however, the difference was not found at the two follow-up times. Compared to youth without an experience of community participation, youth with experience of community

participation at baseline demonstrated significantly greater levels of resilience at all three time points (Cohen's  $d$ s = .30; .27; .36). White youth vs. non-White youth do not differ in resilience scores at any of the three time points.

## 4.2 Multi-Level Analyses

### 4.2.1 Results of MLM Analyses for Study Aim 1

*Study Aim 1* is to examine the impact of three ILPs on resilience among transition-age foster youth. Multilevel modeling (MLM) was performed for the specific research questions. For this study aim, each ILP site was examined separately and long-form data were used for each research question.

- Research Question 1. Is change in resilience for youth in the LST program significantly different than those in the SAU group over two years?

On average, youth in the LST program scored 10.45 ( $SD = 1.98$ ), youth in the SAU group reported the mean of 10.47 ( $SD = 1.98$ ) in resilience and those in the SAU group presented the mean of 10.42 ( $SD = 1.98$ ) at baseline; however, the difference was not statistically significant.

Results of MLM analyses for research question 1 are presented in Table 4.11. An unconditional model was first examined to test the proportion of variation in resilience as a function of time. The unconditional model resulted in an intraclass correlation (ICC) of .32, suggesting one-third of the variability was due to individual differences at level 2 and the other two-thirds of variability occurred due to other factors. The ICC supported use of MLM analysis to adjust the standard errors and produce more accurate significance tests (Bickel, 2007).

Table 4.11 MLM Results for Research Question 1: LST Program ( $n = 468$ )

|                | Unconditional |      | Model    |      | Random   |      |
|----------------|---------------|------|----------|------|----------|------|
|                | Estimate      | S.E. | Estimate | S.E. | Estimate | S.E. |
| Level1         |               |      |          |      |          |      |
| Residual       |               |      | 3.09***  | .18  | 2.92***  | .19  |
| Time           |               |      | .37***   | .06  |          |      |
| Level2         |               |      |          |      |          |      |
| Residual       |               |      | 1.53***  | .18  |          |      |
| Intercept      |               |      | 10.05*** | .15  | 10.05*** | .15  |
| LST condition  |               |      | -.09     | .15  | -.07     | .15  |
| Random effects |               |      |          |      |          |      |
| Intercepts     |               |      |          |      | .91***   | .24  |
| Slopes         |               |      |          |      | .18***   | .05  |
| Means          |               |      |          |      | .36***   | .06  |
| Model fit      |               |      |          |      |          |      |
| Log likelihood | -2799.56      |      | -2781.16 |      | -2774    |      |
| Akaike (AIC)   | 5605.12       |      | 5572.33  |      | 5560.00  |      |
| Bayesian (BIC) | 5620.63       |      | 5598.18  |      | 5591.02  |      |
| ICC            | .320          |      | .326     |      |          |      |

\*\*\*  $p < .001$

To answer research question 1, the LST intervention condition, as a predictor, was added to the unconditional model. There was little change in model fit, but the AIC and BIC were smaller than in the unconditional model suggesting some improvement in model fit. At level 1, time significantly predicted resilience among the youth; resilience scores increased by .37 ( $p < .001$ ) between the baseline and the first follow-up, and between the first follow-up and the second follow-up. However, the LST intervention condition was not significant at level 2. The intercept was significantly different from 0, meaning that the expected mean of resilience equals 10.05 ( $p < .001$ ) for the SAU group.

Because residuals at level 2 are significant, random effects for the slope and intercept were tested. There was little change in model fit, but the AIC and BIC were smaller than in the unconditional and the prior models. Significant random effects were found. There was significant variation in the intercept across youth ( $B = .91, p < .001$ ) and youth demonstrated different slopes for the relationship between resilience and time ( $B = .18, p < .001$ ), with the mean slope significantly different from 0 ( $B = .36, p < .001$ ). However, the intervention condition still did not significantly predict resilience. In conclusion, although there was a significant increase in resilience over time and significant variation between youth, the change was not significantly different between the LST and the SAU groups.

- Research Question 2. Is change in resilience for youth in the IL-ES program significantly different than those in the SAU group over two years?

On average, youth in the IL-ES program scored 10.50 ( $SD = 1.66$ ). Youth in the SAU group reported a mean of 10.58 ( $SD = 1.49$ ) in resilience scores and those in the IL-ES group presented a mean of 10.44 ( $SD = 1.8$ ) at baseline; however, the difference was not statistically significant.

Results of MLM analyses for research question 2 are presented in table 4.12. To test the proportion of variation in resilience as function of time, an unconditional model was first examined. The unconditional model resulted in an ICC of .35; 35% of variability in resilience occurred between individual youth, with the other 65% of variability occurring due to other factors. Based on the

amount of dependence across the levels, MLM analysis that adjusts the standard error was appropriate for more accurate significance tests (Bickel, 2007).

Table 4.12 MLM Results for Research Question 2: IL-ES Program ( $n = 254$ )

|                 | Unconditional |      | Model    |      | Random   |      |
|-----------------|---------------|------|----------|------|----------|------|
|                 | Estimate      | S.E. | Estimate | S.E. | Estimate | S.E. |
| Level1          |               |      |          |      |          |      |
| Residual        |               |      | 2.23***  | .15  | 2.0***   | .14  |
| Time            |               |      | .30***   | .07  |          |      |
| Level2          |               |      |          |      |          |      |
| Residual        |               |      | 1.28***  | .17  |          |      |
| Intercept       |               |      | 10.35*** | .17  | 10.37*** | .16  |
| IL-ES condition |               |      | -.08     | .18  | -.13     | .17  |
| Random effects  |               |      |          |      |          |      |
| Intercepts      |               |      |          |      | .45*     | .23  |
| Slopes          |               |      |          |      | .24***   | .05  |
| Means           |               |      |          |      | .30***   | .07  |
| Model fit       |               |      |          |      |          |      |
| Log likelihood  | -1423.80      |      | -1414.55 |      | -1402.72 |      |
| Akaike (AIC)    | 2853.59       |      | 2839.09  |      | 2817.44  |      |
| Bayesian (BIC)  | 2867.29       |      | 2861.93  |      | 2844.84  |      |
| ICC             | .350          |      | .359     |      |          |      |

\*\*\*  $p < .001$ , \*  $p < .05$

To answer the research question 2, the IL-ES intervention condition, as a predictor, was added to the unconditional model. There was little change in model fit, but the AIC and BIC was smaller than in the unconditional model suggesting some improvement in model fit. At level 1, time significantly predicted resilience among the youth; resilience scores increased by .30 ( $p < .001$ ) for one time increase in time. However, the IL-ES intervention condition was not significant at level 2. The intercept was significantly different from 0; the expected mean of resilience equaled 10.35 ( $p < .001$ ) for the SAU group.

The slope and intercept for time were allowed to vary across individual youth in the next (random effects) model because residuals at level 2 were significant. There was little change in model fit, but the AIC and BIC were smaller than in the unconditional model suggesting some improvement in model fit. Significant random effects were also found. There was significant variation in the intercept across youth ( $B = .45, p = .049$ ) and youth had different slopes for the relationship between resilience and time ( $B = .24, p < .001$ ). Means for slopes were significantly different from 0 ( $B = .30, p < .001$ ). However, the IL-ES intervention condition still did not significantly predict resilience. In conclusion, the IL-ES and the SAU groups did not significantly differ in change in resilience, although there was significant increase in resilience over time among the overall youth.

- Research Question 3. Is change in resilience for youth in the Massachusetts Adolescent Outreach program significantly different than those in the SAU group over two years?

On average, youth in the Massachusetts Adolescent Outreach program scored 11.15 ( $SD = 1.91$ ) in resilience at baseline. Although youth in the SAU group ( $M = 11.25, SD = 1.89$ ) reported a .18 point higher level of resilience at baseline than those in the Outreach treatment group ( $M = 11.06, SD = 1.94$ ), the difference was not statistically significant.

Results of MLM analyses for research question 3 are presented in table 4.13. First of all, an unconditional model was examined to test the proportion of variation in resilience as a function of time. The unconditional model resulted in

an ICC of .295, suggesting 29.5% of variability occurred due to individual differences and the other 60.5% of variability occurring due to other factors. For more accurate significance tests, MLM analysis that adjusts the standard error was appropriate (Bickel, 2007).

Table 4.13 MLM Results for Research Question 3: Outreach program ( $n = 194$ )

|                    | Unconditional |      | Model    |      | Random   |      |
|--------------------|---------------|------|----------|------|----------|------|
|                    | Estimate      | S.E. | Estimate | S.E. | Estimate | S.E. |
| Level1             |               |      |          |      |          |      |
| Residual           |               |      | 3.14***  | .18  | 2.88***  | .22  |
| Time               |               |      | -.03     | .06  |          |      |
| Level2             |               |      |          |      |          |      |
| Residual           |               |      | 1.31***  | .26  |          |      |
| Intercept          |               |      | 11.13*** | .24  | 11.15*** | .24  |
| Outreach condition |               |      | .04      | .22  | -.004    | .22  |
| Random effects     |               |      |          |      |          |      |
| Intercepts         |               |      |          |      | .49      | .33  |
| Slopes             |               |      |          |      | .24**    | .07  |
| Means              |               |      |          |      | -.03     | .10  |
| Model fit          |               |      |          |      |          |      |
| Log likelihood     | -1163.99      |      | -1163.91 |      | -1157.92 |      |
| Akaike (AIC)       | 2333.97       |      | 2337.83  |      | 2327.84  |      |
| Bayesian (BIC)     | 2346.89       |      | 2359.35  |      | 2353.67  |      |
| ICC                | .295          |      | .295     |      |          |      |

\*\*\*  $p < .001$ , \*\*  $p < .01$

As a predictor, the Massachusetts Adolescent Outreach intervention condition was added to the unconditional model to answer research question 3. There was little change in model fit. At level 1, time did not significantly predict resilience. At level 2, the Massachusetts Adolescent Outreach intervention was not significant. The intercept was significantly different from 0; the expected mean of resilience was 11.13 ( $p < .001$ ) for the SAU group.

In the next (random effect) model, the slope and intercept for time were allowed to vary across individual youth because residuals at level 2 were significant. There was little change in model fit, but the AIC and BIC were smaller than in the tested model suggesting some improvement in model fit. There was random variability among slopes for the relationship between resilience and time ( $B = .24, p = .001$ ). However, there was no significant variation in the intercept across youth. Means for slopes were not significant, meaning mean point estimation of slopes equaled 0. The Massachusetts Adolescent Outreach intervention condition still did not significantly predict resilience. In summary, resilience of youth in the Massachusetts Adolescent Outreach program did not significantly change over time and there was no difference found in resilience between the Massachusetts Adolescent Outreach intervention and the SAU groups.

In summary, across all three sites, participation in the ILP program did not significantly predict change in resilience; meaning that youth in each ILP group and those in SAU did not differ in change in resilience over two years. However, resilience scores of overall youth in the LST and IL-ES sites significantly improved over time.

- Research Question 4. Is change in resilience for youth in the ILPs significantly different than those in the SAU groups over two years?

On average, youth in the three ILPs scored 10.61 ( $SD = 1.90$ ) on resilience at baseline. Youth in the three SAU groups had a mean resilience of 10.66 ( $SD =$

1.87) and those in the three ILP group presented a mean resilience of 10.56 ( $SD = 1.93$ ) at baseline; however, the difference was not statistically significant.

Table 4.14 includes results of MLM analyses for research question 4. An unconditional model was first examined to test the proportion of variation in resilience as a function of time. The unconditional model resulted in an intraclass correlation (ICC) of .32, meaning 32% of the variability in resilience occurred due to individual differences, with the other 68% of variability occurring due to other factors. The ICC supported use of MLM analysis to adjust the standard errors and to produce more accurate significance tests (Bickel, 2007).

To answer research question 4, the following variables are added to the unconditional model. First, the three ILP sites were added with the Massachusetts Adolescent Outreach site used as the reference group. Next, ILP (vs. SAU) condition was added to the unconditional model as a predictor. Increased values of the AIC and BIC indicated that model fit did not improve. At level 1, time significantly predicted resilience; youth in the three sites improve in resilience over time ( $B = .26, p = .001$ ). At level 2, there was no significant change in resilience when comparing the ILP to SAU. However, ILP site significantly predicted changes in resilience ( $B = .18, p = .008$ ); compared to youth in the Outreach site, those in the IL-ES site demonstrated greater change in resilience over time controlling for the ILP intervention condition ( $B = 1.32, p < .001$ ). However, youth in the Outreach and LST sites did not significantly differ. A separate analysis that used the LST site as the reference group revealed no significant difference between the LST and IL-ES sites.

Table 4.14 MLM Results for Research Question 4: All Program Sites ( $n = 916$ )

|                         | Unconditional |      | Model    |      | Random   |      |
|-------------------------|---------------|------|----------|------|----------|------|
|                         | Estimate      | S.E. | Estimate | S.E. | Estimate | S.E. |
| Level1                  |               |      |          |      |          |      |
| Residual                |               |      | 2.88***  | .11  | 2.67***  | .11  |
| Time                    |               |      | .26***   | .04  |          |      |
| Level2                  |               |      |          |      |          |      |
| Residual                |               |      | 1.42***  | .12  |          |      |
| Intercept               |               |      | 10.24*** | .12  | 10.21*** | .11  |
| ILPs (vs. SAU)          |               |      | -.06     | .10  | -.07     | .10  |
| ILP group <sup>15</sup> |               |      | .18**    | .07  | .23***   | .07  |
| LST (Outreach)          |               |      | .05      | .06  | .05      | .07  |
| IL-ES (Outreach)        |               |      | 1.32***  | .08  | 1.32***  | .08  |
| Random effects          |               |      |          |      |          |      |
| Intercepts              |               |      |          |      | .67***   | .16  |
| Slopes                  |               |      |          |      | .21***   | .03  |
| Means                   |               |      |          |      | .26***   | .04  |
| Model fit               |               |      |          |      |          |      |
| Log likelihood          | -5401.54      |      | -6319.65 |      | -6296.44 |      |
| Akaike (AIC)            | 10809.09      |      | 12655.30 |      | 12610.89 |      |
| Bayesian (BIC)          | 10826.63      |      | 12702.66 |      | 12664.16 |      |
| ICC                     | .324          |      |          |      |          |      |

\*\*\*  $p < .001$ , \*\*  $p < .01$ , ( ): reference group

In the next (random effect) model, the intercept and slope for time were allowed to vary across individual youth because residuals at level 2 were significant. The AIC and BIC were smaller than in the prior models suggesting some improvement in model fit. Significant random effects were found. There was significant variation in the intercept across youth ( $B = .67, p < .001$ ) and individual youth had different slopes for the relationship between resilience and

<sup>15</sup> An analysis was conducted using the LST group as a reference to examine if there is difference between the LST and IL-ES, but they did not significantly differ.

time ( $B = .21, p < .001$ ). Means for slopes were also significantly different from 0 ( $B = .26, p < .001$ ).

The ILP intervention condition did not significantly predict changes in resilience. However, there was a significant difference for ILP site ( $B = .23, p < .001$ ); compared to youth in the Massachusetts Adolescent Outreach site, those in the IL-ES site demonstrated greater change in resilience over time ( $B = 1.42, p < .001$ ), but there was no significant difference between the LST and Outreach sites. In conclusion, whereas the change in resilience was not significantly different between the ILP and the SAU groups, there was significant difference in change in resilience among ILP sites over time.

#### 4.2.2 Results of MLM Analyses for Study Aim 2

*Study Aim 2* is to examine the role of ILPs on resilience in the social-ecological environments of foster care youth in transition toward living independently.

- Research Question 5. Is participation in ILPs a significant predictor of change in resilience over time after controlling for individual, micro-level, meso/exo-level, and macro-level factors?

The results of MLM analyses for research question 5 are presented in Table 4.15. An unconditional model that resulted in the ICC value of .324<sup>16</sup> supported use of MLM analyses that adjust standard error for more accurate

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<sup>16</sup> The value of ICC is calculated based on long-form data.

hypothesis tests (Bickel, 2007). Child welfare status at the two follow-up time points was added as a control in all models tested except the unconditional model. Child welfare status significantly predicted resilience scores at each time point. At the first follow-up, youth in the system demonstrated .31 ( $p < .001$ ) higher scores on resilience than discharged youth. Compared to youth who discharged from the system, those in the system .55 ( $p < .001$ ) also presented greater levels of resilience at the second follow-up (two-year after base-line). The results were the same across all the models tested.

In model 1, individual-level factors were examined (see Table 4.15). Gender, ethnicity, and externalizing behavior problems significantly predicted resilience slopes controlling for the other individual level variables. Compared to male youth, female youth demonstrated greater change in resilience slopes over time ( $B = -.40, p < .001$ ). Non-Hispanic youth, compared to Hispanic youth, demonstrated greater change in resilience slopes over time controlling for the other variables ( $B = -.28, p = .02$ ). When youth reported higher levels of externalizing problems at baseline, they were less likely to demonstrate changes in resilience slopes over time ( $B = -.07, p < .001$ ). Age, race, religiosity, internalizing behavior problems, number of foster home placements, and number of group home placements did not significantly predict resilience.

In model 2, micro-level factors were added to the model 1. The AIC and BIC became smaller than in model 1 suggesting some improvement in model fit. Whereas ethnicity became non-significant in the presence of micro-level factors,

gender and externalizing behavior significantly predicted resilience slopes controlling for the other individual level and micro-level variables.

Table 4.15 MLM Results for Research Question 5 ( $n = 731$ )

|                         | Model 1  |      | Model 2  |      | Model 3  |      |
|-------------------------|----------|------|----------|------|----------|------|
|                         | Estimate | S.E. | Estimate | S.E. | Estimate | S.E. |
| Age                     | .09      | .09  | .09      | .09  | .06      | .09  |
| Gender                  | -.40***  | .11  | -.41***  | .11  | -.42***  | .11  |
| Race                    | -.10     | .12  | -.11     | .12  | -.07     | .12  |
| Ethnicity               | -.28*    | .12  | -.22     | .12  | -.20     | .11  |
| Religiosity             | .10      | .06  | .09      | .06  | .08      | .06  |
| Ext_behavior            | -.07***  | .01  | -.07***  | .01  | -.07***  | .01  |
| Int_behavior            | -.002    | .01  | .002     | .01  | .003     | .01  |
| N./fosterhome           | .02      | .05  | .01      | .05  | -.01     | .05  |
| N./grouphome            | -.04     | .04  | -.03     | .04  | -.02     | .04  |
| Mother contact          |          |      | -.03     | .03  | -.02     | .03  |
| Father contact          |          |      | -.02     | .04  | -.02     | .04  |
| Friend support          |          |      | .05      | .05  | .04      | .05  |
| Mentor                  |          |      | .21      | .20  | .17      | .20  |
| Social support          |          |      | .04***   | .01  | .03***   | .01  |
| ILP participation       |          |      |          |      | -.07     | .10  |
| Foster parent support   |          |      |          |      | .09*     | .04  |
| Social worker contact   |          |      |          |      | -.02     | .06  |
| Community participation |          |      |          |      | .48***   | .12  |
| Residual variances      | .91***   | .10  | .86***   | .10  | .80***   | .10  |
| Model fit               |          |      |          |      |          |      |
| Log likelihood          |          |      |          |      |          |      |
| Log likelihood          |          |      |          |      |          |      |
| Akaike (AIC)            |          |      |          |      |          |      |
| Akaike (AIC)            |          |      |          |      |          |      |
| Bayesian (BIC)          |          |      |          |      |          |      |
| Bayesian (BIC)          |          |      |          |      |          |      |

\*\*\*  $p < .001$ , \*  $p < .05$

Female youth, compared to male youth, demonstrated higher change in resilience slopes over time ( $B = -.41, p < .001$ ). When youth reported lower levels of externalizing problem at baseline, they tended to demonstrate greater change in resilience slopes ( $B = -.07, p < .001$ ). Among the micro-level factors added, social support was the only variable that significantly predicts change in resilience

slope; youth demonstrated greater change in resilience slopes when they received higher levels of social support at baseline ( $B = .04, p < .001$ ).

In model 3, macro-level factors including ILP participation were added to the model. Although the AIC was smaller in model 3 than in the model 2, the BIC was bigger suggesting that the model may be more complex than needed. Gender, externalizing behavior, and social support from model 2 still significantly predicted resilience slopes controlling for the other individual level, micro-level, and macro-level variables. Compared to male youth, female youth demonstrated higher change in resilience slopes over time ( $B = -.42, p < .001$ ). Youth demonstrated greater growth in resilience over time ( $B = -.07, p < .001$ ) when they reported lower levels of externalizing problem at baseline. Youth tended to improve resilience over time when they received higher levels of social support at baseline ( $B = .03, p = .001$ ).

Among macro-level factors added, foster parent support and community participation were significant predictors of resilience slopes. Youth who received more support from foster parent demonstrated greater growth in resilience ( $B = .09, p = .03$ ). Youth who participated in a community organization at baseline demonstrated greater growth in resilience over time than those who did not ( $B = .48, p < .001$ ).

In summary, in the final model, gender and externalizing behaviors were significant predictors of slopes for resilience at the individual level. At the micro-level, social support significantly predicted individual growth in resilience. Foster parent support and community participation significantly predicted individual

growth in resilience at the macro-level. However, participation in the ILPs (vs. SAU) did not significantly predict growth in resilience.

## CHAPTER 5: DISCUSSION

This chapter presents a discussion of study findings: (1) role of ILPs on resilience among transition-age foster care youth and (2) other factors that predict resilience. In addition, limitations and strengths of this study and implications for future research, practice, and policy are discussed. Finally, the conclusion summarizes this study.

### 5.1 Overview of Study Findings

#### 5.1.1 Role of ILPs in Resilience Change

This study examined the impact of three different ILPs on resilience, using secondary data from the Multi-Site Evaluation of Foster Youth Programs (Chafee Independent Living Evaluation Project, 2001-2010). Previous studies that examined the impact of ILPs on developmental outcomes have reported mixed findings depending on their outcomes of interest (Courtney, Zinn, Johnson, et al., 2011; Courtney, Zinn, Koralek, et al., 2011; DHHS, 2008; Georgiades, 2005; Lemon, et al., 2005). This dissertation did not find an impact of three different ILPs on resilience when using multiple developmental outcomes to operationalize resilience. Across all the three programs, youth in the ILP treatment groups and those in SAU groups did not significantly differ in change in resilience over the two year study period. In addition, consistent with Jones' (2012) study, when the role of ILPs was examined with other social and environmental influences, ILP participation did not significantly predict change in resilience. These findings may

suggest that ILPs do not positively influence resilience among foster care youth during the transition to adulthood.

However, the following limitations on the study design should be acknowledged before further interpretation of the study findings. First, youth in the control groups were not completely blocked from the ILP treatments and as noted in the Method chapter, some SAU group youth in all three sites received some of the ILP intervention services (Courtney, Zinn, Johnson, et al., 2011; Courtney, Zinn, Koralek, et al., 2011; DHHS, 2008). Second, the dosages (amount of services that youth received) of ILP treatments varied considerably (Courtney, Zinn, Koralek, et al., 2011). More than one-third of youth in the LST treatment group did not complete the program. In the IL-ES program, more than 30% of youth in the treatment group received only the minimum service (e.g., monthly newsletter) and 20% of them received the most intensive services (e.g., job assistance). Services offered for youth in the Outreach program, as was its purpose, were individualized across education, employment, money management, housing, and other trainings for independent living and may have varied depending on availability of the services (Courtney, Zinn, Johnson, et al., 2011). Lastly, youth in the three control groups received SAU. It is possible that they were receiving similar services as youth in the treatment groups. Moreover, the impact of the ILP programs is based on comparisons to the existing services rather than absence of programs (Zinn & Courtney, 2015). Therefore, the findings may only suggest that the three programs do not outperform existing ILP services.

All individuals have some level of resilience (Tusaie et al., 2007) and foster youth have the ability to adapt to their circumstances and develop substantial resilience (McGloin & Widom, 2001). Likewise, this study was able to observe change in resilience over time among youth in two of the ILP sites. MLM analyses that examined each program indicated in that youth in the LST and IL-ES sites increased their resilience over the two years from baseline to the two year follow-up. Although youth in the Outreach site did not have significant changes in resilience, they presented the highest resilience score at baseline and maintained similar levels of resilience over two years. Youth in the other two sites reached almost the same level of resilience as those in the Outreach program after two years.

Although youth in the Outreach site demonstrate significantly lower change in resilience over two years, it is notable that youth in the Outreach site had a greater level of resilience at baseline than those in the other two sites despite the fact that they were recruited from intensive foster care<sup>17</sup>, which is designed for youth with greater mental, emotional, and physical needs than those in regular foster care (Courtney, Zinn, Johnson, et al., 2011). One possible explanation is that they had been receiving more intensive care and support from the system than those in regular foster care; youth with greater needs are placed in homes where the foster parents are specially trained and the number of youth is

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<sup>17</sup> A group home/residential care is different from intensive care; it is for youths in need of greater supervision, which is a level of care above intensive foster care (Courtney, Zinn, Johnson, et al., 2011, p.15)

limited to two. In addition, an intensive foster care worker who has 8 youth at maximum as a caseload and responsibility of tracking the status of the placement is assigned to the youth (Courtney, Zinn, Johnson, et al., 2011). This level of service provision to all youth at the site may confound findings.

#### 5.1.2 Factors related to Change in Resilience

Significant predictors of resilience change were found while examining the role of the ILP programs in the social environmental contexts of foster youth. At the individual level, gender and externalizing behavior problems significantly predicted change in resilience. Social support was the only significant predictor of resilience change at the micro-system level. At the meso/exo-system level, foster parent support and community participation were significant predictors of resilience change.

*Gender.* Previous studies have reported mixed findings on the relationship between gender and resilience. Consistent with studies that reported female youth were more resilient than male youth (Daining & DePanfilis, 2007; Munson & McMillen, 2009), female youth in this study demonstrated greater positive change in resilience than male youth. Daining and DePanfilis (2007) suggested acknowledging differences between male and female youth in designing programs or services. Female youth perform better than male youth in academic functioning from elementary school through college (Stoet & Geary, 2015; Voyer & Voyer, 2014) and male youth are more physically active than female youth (Telford & Olive, 2015). Female youth were more likely to receive independent living services than male youth (Courtney & Dworsky, 2005). By considering these

differences while designing and implementing ILP services, better outcomes may be expected. For example, male foster care youth are likely to have problems of alcohol abuse or substance abuse whereas female foster youth are likely to have depression or PTSD (Courtney et al., 2005). This suggests that the focus of ILP services that address mental health problems should be different for males and females. Female foster youth are more likely to have a child than male foster youth at the age of 19 (Courtney et al., 2005); therefore, ILP services need to incorporate education on birth control, pregnancy, and parenting skills training for female youth. In addition, compared to female foster youth, lower levels of expectations for college attendance and present academic performance among male foster youth may mean that they are at greater risk of lower education attainment (Kirk, Lewis, Brown, Nilsen, & Colvin, 2012). Kirk et al. (2012) suggested programs that incorporate additional mentors who focus on educational preparation may give greater benefit to male youth than female youth in foster care. ILP services for male youth can include specialized educational mentors for better outcomes in their educations.

*Externalizing behavior problems.* Studies have found significant relationships between resilience and externalizing (Jones, 2012; Jones, 2013) and internalizing behavior problems (Yates & Grey, 2012). However, in this study, only externalizing behavior problems were significantly associated with changes in resilience. Unlike the studies by Jones (2012, 2013) that had a small sample size, in this dissertation, the association was upheld even after accounting for other individual and social environmental factors. As a risk factor for resilience,

externalizing behavior problems of foster youth need to be assessed accurately, monitored, and services provided if needed while in foster care and during the transition to adulthood. Pecora, Jensen, Romanelli, Jackson, and Ortiz (2009) suggested specialized family foster care and systems of care models for mental health services (which are child and family centered, community-based, and culturally competent) as promising strategies to improve service access and treatment in mental health areas including behavioral problems.

*Social support.* It is a general consensus that social support is essential for health and well-being and is particularly important for vulnerable populations (Collins et al., 2010). Studies have also found that social support positively influences resilience among foster youth (Daining & DePanfilis, 2007; Reilly, 2003; Yates & Grey, 2012). Not surprisingly, in this study, level of social support at baseline significantly predicted change in resilience over two years; when youth had higher levels of social support at baseline, they were more likely to improve in resilience. This finding underscores the importance of support systems of youth in transition to adulthood because they lose the formal support system as they exit out of care (Daining & DePanfilis, 2007).

*Foster parent support.* In past studies, having contact with foster parents after care was associated with resilience; however, the association was not upheld when controlling for other individual and social environmental factors in the studies by Jones (2012, 2013). In this dissertation, a significant relationship between foster parent support and improvement in resilience was found even after adjusting for other individual and social environmental factors. Foster parents

play an important role in preparing youth for independent living; therefore, formal collaboration with them is necessary to prepare youth to be self-sufficient (Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Lemon et al., 2005). Youth mainly learn life skills from foster parents before leaving care (Courtney et al., 2001; Lemon et al., 2005). After leaving care, foster parents may serve as mentors and provide a sense of continuity (Jones, 2013). They might even offer emergency housing to youth (Pecora et al. 2003). Previous research suggests youth in family type placements receive more support and are more prepared for independent living than youth who reside in group homes or residential centers (Mech, Ludy-Dobson, & Hulseman, 1994). Expanded family foster care may benefit transition-age youth in terms of acquisition of independent living skills and making supportive connections.

*Community participation.* The result of this study supports the finding by Jones (2013) that participation in a community organization predicted resilience. In this dissertation, youth who participated in a community organization at baseline were more likely to increase resilience over two years although the changes observed were small after controlling for other individual and social environmental factors. Collins et al., (2010) suggested the potential role of community organizations in providing social support for foster care youth. In addition, the theory of Positive Youth Development emphasizes that participation in community based activities positively influences youths' development (Lerner, Almerigi, Theokas, & Lerner, 2005). An organization in the community where

youth live their daily life can be a basis for stability, providing feelings of connectedness because it is nearby and available (Collins et al. 2010).

*Child welfare status.* Youth in the child welfare system demonstrated higher levels of resilience than youth discharged from the system. In addition, child welfare status significantly predicted resilience after controlling for other individual and social environmental factors. Previous studies also reported similar findings that being in care to the age of 21 benefits foster youth in education, income, and early pregnancy (Courtney, Dworsky, & Pollack, 2007; Courtney, Zinn, Johnson, et al., 2011; Peters, Dworsky, Courtney, & Pollack, 2009). The finding is understandable because youth who were receiving care and support while in the system may lose all that support as they leave the child welfare system. Further research is needed to support the association between child welfare status and resilience.

## 5.2 Strengths and Limitations of the Dissertation

### 5.2.1 Limitations

Due to the use of secondary data for this study, there are some inevitable restrictions on the study methods and variable selection. First, there are limitations of the methods of the Multi-Site Evaluation of Foster Youth Programs study. Youth did not always meet the inclusion criteria and complete control over the programs was not guaranteed across the three ILPs sites (DHHS, 2008). In addition, there was the possibility that youth in the SAU group received similar services from other sources (DHHS, 2008). Although Courtney et al. (add year) acknowledged that some youth in the SAU groups received ILP intervention

services, the youth were not identified in the data set and therefore, this dissertation was not able to identify and exclude the youth. Lastly, duration and dosages of the interventions varied among individuals and across the ILPs; however, data on dosage were not included in the dataset and therefore this study was not able to identify and control for dosage effects. These limitations may have prevented this study from finding significant differences in resilience between the ILP and services-as-usual groups.

Next, not all variables identified as important in the literature review are available to use in the dataset. For example, questions that could be used and operationalized for life stress or life satisfaction were not available. Based on the social ecological perspective, there are various systems that are influential to individuals such as neighborhoods, schools, and policies or cultures of a society. It is not guaranteed that this study examined the best social ecological model of resilience, including all possible variables. Specifically, this study is not able to examine macro-level factors due to the use of secondary data; variables that are relevant to macro-level factors were not available. Additionally, the question used to assess the construct of religion is double-barreled; religion and spirituality are different constructs (Carlson, Kirkpatrick, Hecker, & Killmer, 2002; Zinnbauer et al., 1977). When interpreting findings relating to religion, caution is needed.

Resilience is conceptualized as having multiple domains and operationalized as a composite score of the domains. Although this study used eight domains following the latest conceptualization of resilience among foster youth in transition (Jones, 2013), this study does not include all possible domains

of resilience. The constructs of resilience for this population have not been fully identified and studies have varied in resilience domains and operationalization. Whereas some researchers used interpersonal or intrapersonal assets (e.g., mental health, civic engagement, relational competence) to operationalize resilience (Edmond et al., 2006; Yates & Grey, 2012), this study did not include those constructs; some of the constructs (e.g., mental health) were examined as covariates and others were not available in the data used. In addition, questions extracted for each domain were identified based on availability; therefore, it may be possible that the questions do not capture or present the concept of each domain accurately.

Regarding generalizability, the Multi-Site Evaluation of Foster Youth Programs study was conducted in two states (California and Massachusetts) and the ILPs were selected based on county-available programs. The study findings may not be generalizable to foster care youth in other counties and states with access to different ILP services. However, the findings from this dissertation may be generalizable to foster care youth in counties and states where similar ILPs are implemented and consist of foster youth with similar characteristics.

### 5.2.2 Strengths

There has been a lack of studies on ILPs with an experimental study design. The Multi-Site Evaluation of Foster Youth Programs study rigorously tested and evaluated ILPs using a true-experimental design. Further examination on the impact of three different ILPs in this dissertation adds to the body of knowledge about ILPs.

Studies on resilience of foster care youth in transition suggested that a longitudinal study should be employed because resilience, which is not a static trait, is most effectively studied over time (Daining & DePanfilis, 2007; Jones, 2012). The current dissertation with repeated measures addressed the suggestion of the previous studies, investigating changes in resilience for two years. In addition, examining multiple domains over time allowed capturing new domains that may become competent and salient during the transition period (Masten & Powell, 2003). In the original study reports of the Multi-Site Evaluation of Foster Youth Programs, resilience that captures youths' adaptations across domains was not investigated.

A large sample size ( $n = 917$ ) is another strength of this study. Approximately 90% of study participants were retained across the three ILPs and across the three time points. It provided sufficient statistical power to detect relationships between variables. For MLM, a sample size of 50 or less at level 2 may result in biased estimates of the standard errors of the variance terms at level 2. The aforementioned bias does not influence regression coefficients and variance terms at level 1 (Mass & Hox, 2005). Therefore, this study with the large sample ( $n = 917$ ) at level 2 is adequate for MLM. In addition, MLM accounts for the possible dependence of observations, adjusting standard errors more accurately than an ordinary least squares regression analysis (Bickel, 2007).

## 5.3 Implications

### 5.3.1 Implications for Future Research

By using the social ecology of resilience as the conceptual framework, this study was able to examine risk and protective factors of resilience among foster youth with a holistic view. However, there may be many other factors that influence individual youth and that this study was not able to include. Future studies may further develop the model by examining predictors that were not included in this study. In addition, in the MLM model for RQ 5, the value of BIC became worse, suggesting that the model may have too many parameters to be estimated given the sample size. Therefore, future studies that replicate and expand upon this dissertation may need a bigger sample size or may need to remove some of the nonsignificant predictors that were used in this dissertation; further research is needed to identify the most relevant predictors of change in resilience among this population.

Focusing on transition-age foster youth, more studies need to identify and develop resilience domains to accurately measure resilience. For example, domains of interpersonal assets such as relational competence or connectedness to support systems (Jones, 2012; Yates & Grey, 2012) would be important domains to investigate considering the fact that youth in transition may lose their support systems and start new relationships as they exit care. And also, using a well-designed questionnaire that includes consistent and reliable items for each domain will minimize error to operationalize resilience. For example, there may be gender differences in resilience domains; development of a global measure that would

work across genders – or gender specific measures – may be needed. It is also possible that there is ceiling effect in resilience domains for youth in the Outreach program. Future studies may put some effort toward the development of a standardized measurement that could assess developmental functioning for transition-age youth.

There has been a lack of studies on ILPs that used experimental designs. Although this dissertation was based on data collected from a study with an experimental design, the identified limitations on the study design should be addressed to better establish the causal impact of ILPs. Furthermore, more research with high-quality and robust study designs will help foster youth and social welfare workers make decisions about ILP service provision (Everson-Hock et al., 2011).

### 5.3.2 Implications for Social Work Practice and Policy

There are some recommendations for workers and policy makers in child welfare working with transition-age youth. First, this study underscores the role of child welfare social workers in making sure support systems exist before youth exit care. Child welfare workers should make an effort for youth to have quality relationships with birth families and to bolster informal support systems before youth exit care (Daining & DePanfilis, 2007). Although the findings of this study and previous studies (Jones, 2012, 2013) did not find a positive role of birth family on resilience, reconnection with birth family commonly happens after care (Collins, Paris, & Ward, 2008). As Collins et al. (2010) suggested, family focused interventions or programs that are designed to engage youth with their families

may be utilized to reconnect transitioning youth with their families without negative side effects. Also, people from the system including foster parents and peers are the most recent connections for foster care youth; it may be easier for them to maintain the relationships rather than to contact their families of origin or to start new relationships.

Furthermore, caseworkers by themselves could play a role of a mentor for youth who exit the care. Although this study did not find a significant association between having a mentor and improvement in resilience, there has been an agreement that more enduring and consistent relationships, at least 1 year in duration, produce better outcomes in youth development (Dubois, Holloway, Valentine, & Cooper, 2002; Grossman & Rhodes, 2002; Munson & McMillen, 2009). Because youth have been working with their caseworkers until they exit care, ongoing and consistent relationships with them may naturally occur. However, to bolster this, the child welfare system needs to support caseworkers in maintaining contact with youth who have exited the system by providing reduced caseloads.

The finding of significant differences in resilience between youth in the system and discharged youth suggests that youth should be prepared for independent living before leaving the system. Consideration should be given to allowing youth who are not prepared for independent living to remain in the system. It was pointed out earlier that the age of 18 is too young to take all the responsibilities as an adult (Wade & Dixon, 2006), considering that youth in the general population do not leave their parental homes until the age of 23

(Williams, 2005). Furthermore, extending care (to the age of 21) provides benefits to foster youth regarding annual income, higher education, and reduced risk of pregnancy for female youth (Courtney et al., 2007). The work-life earning benefit of extending care on postsecondary education was estimated from \$43,000 up to \$113,000 (Peters et al., 2009). Foster youth may need more time in care to be self-sufficient. Transitional housing has been suggested as a promising option for youth who leave care because it allows youth sufficient time in finishing education, obtaining employment, and learning living skills (Barth, 1990; Daining & DePanfilis, 2007; Mech, 2003; Reilly, 2003). Policy makers might expand transitional housing programs and make them available for all transition-age foster youth in need.

Findings of this study suggest elements to supplement existing ILPs. First, gender differences should be reflected in designing ILP services (Daining & DePanfilis, 2007). Gender differences in learning and development may suggest that gender-specific programs might result in better outcomes. Secondly, assistance to address mental health problems should be offered. Whereas ILP services have been focused on education, job attainment, and housing, it seems that youths' mental health has been overlooked. Besides extended Medicaid eligibility, ILP services need to address youth mental health; foster youth need to learn how to cope with their mental health problems and how to seek help to manage mental health problems when they do not have support systems.

In addition, in terms of connecting support systems, a peer mentor program and support groups for transitioning youth can be a component of

independent living programs or services (Daining & DePanfilis, 2007; Jones, 2012). Many studies reported the positive role of peers on youths' developmental outcomes (Edmond et al., 2006; Jones, 2012; Jones, 2013; Merdinger et al., 2005; Yates & Grey, 2012). Youth can have an opportunity to share experiences and feelings of coping with transition (Daining & DePanfilis, 2007) and to build a future support system through ILP services. Lastly, foster youth may have an opportunity to participate in community organizations through ILPs. ILP services may offer possible community organizations that youth can connect with and help them engage in the community activities. Indeed, policy makers should help child welfare social workers and researchers develop better ILPs by gathering public attention and providing sufficient funding for programs.

Policy makers should give attention to the significant role of foster parents in preparing youth for independent living. Special support for foster parents who have transition-age youth in their home should be given. They might need age-specific skills to guide transition-age youth, parenting methods, and available resources for further education, job attainment, and housing. Special trainings on those components would help foster parents guide transition-age foster youth and youth may benefit in being better prepared for independent living.

#### 5.4 Conclusion

This study aimed to examine the relationship between ILPs and resilience among transition-age foster care youth using the social ecology of resilience framework. First, the three ILPs tested in this study did not outperform the services as usual ILPs. Second, participation in the three ILPs did not significantly

predict changes in resilience after controlling for individual and social environmental factors. However, gender and externalizing behavior problems at the individual level; social support at the micro-system level; and foster parent support, community participation, and child welfare status at the meso/exo-system level were found to be significant predictors of resilience change over time. The findings of this study underscore the role of child welfare social workers, foster parents, and the child welfare system in preparing youth for independent living.

## Appendix A. Exploration of Resilience Composite Scores

Three different ways to calculate resilience composite scores were explored: (1) to use eight domains as proposed; (2) to use seven domains combining employment and education into one domain; and (3) to use only six functional outcomes, which replicates the work of Daining and DePanfilis (2007). First, distributions of each domain were examined (Table A. 1-Table A.9). Second, inter-correlations among different domains were examined (Table A.10). Lastly, inter-correlations among resilience scores were examined (Table A.11).

### 1. Distributions of Domains

**Education.** The distributions for the education domain across the three time points are presented in Table A.1. Ninety two percent of youth scored 2 (currently enrolled) points for education and only 6% youth scored 0 (not enrolled or ever attended in the past 12 months either) and 3% scored 1 (ever attended in the past 12 months) point at baseline. However, fewer youth scored 2 points and more youth scored 0 or 1 point at the two follow-up times.

Table A.1. Frequency of Resilience Domains: Education

|                               | 0<br>(not enrolled) | 1<br>(ever attended) | 2<br>(currently enrolled) |
|-------------------------------|---------------------|----------------------|---------------------------|
| Baseline ( <i>n</i> = 917)    | 52<br>(5.7%)        | 23<br>(2.5%)         | 842<br>(91.8%)            |
| Follow-up 1 ( <i>n</i> = 838) | 188<br>(22.4%)      | 96<br>(11.5%)        | 554<br>(66.1%)            |
| Follow-up 2 ( <i>n</i> = 821) | 312<br>(38%)        | 149<br>(18.1%)       | 360<br>(43.8%)            |

**Employment.** Distributions of the employment domain across three time points are presented in Table A.2. About 61% youth scored 0 (not currently

working) points and 20% of youth scored both 1 (ever employed in the past 12 months) and 2 (currently working) points. However, fewer youth scored 0 points whereas more youth scored 1 or 2 points at the two follow-up times.

Table A.2. Frequency of Resilience Domains: Employment

|                               | 0<br>(not working) | 1<br>(ever employed) | 2<br>(currently working) |
|-------------------------------|--------------------|----------------------|--------------------------|
| Baseline ( <i>n</i> = 914)    | 568<br>(62.2%)     | 164<br>(18%)         | 181<br>(19.8%)           |
| Follow-up 1 ( <i>n</i> = 839) | 346<br>(41.2%)     | 302<br>(36%)         | 191<br>(22.8%)           |
| Follow-up 2 ( <i>n</i> = 821) | 244<br>(29.7%)     | 201<br>(24.5%)       | 376<br>(45.8%)           |

**Education and Employment.** Table A.3 presents the frequencies of the combined employment and employment domain. When the education and employment domains were combined, about 93% of youth scored 2 points (currently enrolled in school or employed) and about 3% of youth scored either 0 (neither attended school nor employed) or 1 (ever attended school or employed in the past 12 months) point at baseline. During the two year follow-ups, youth who scored 0 points and youth who scored 1 point increased whereas youth who scored 2 points decreased to 69%.

Table A.3. Frequency of Resilience Domains: Employment and Employment

|                                  | 0<br>(neither attended school<br>nor employed) | 1<br>(ever attended school<br>or employed) | 2<br>(currently enrolled in<br>school or employed) |
|----------------------------------|------------------------------------------------|--------------------------------------------|----------------------------------------------------|
| Baseline<br>( <i>n</i> = 917)    | 34<br>(3.7%)                                   | 27<br>(2.9%)                               | 856<br>(93.3%)                                     |
| Follow-up 1<br>( <i>n</i> = 839) | 64<br>(7.6%)                                   | 154<br>(18.4%)                             | 621<br>(74%)                                       |
| Follow-up 2<br>( <i>n</i> = 821) | 98<br>(11.9%)                                  | 159<br>(19.4%)                             | 564<br>(68.7%)                                     |

In summary, youth were increasingly less likely to be enrolled in education programs and more likely to be employed over the two year period. When the two domains were combined, youth with 0 or 1 point increased while youth with 2 points decreased for two years. Considering the ages (16-20) of the youth sample, the separated domains reflect better their developmental changes than the combined domain and therefore the two separate domains were used in the resilience score (see also the Domain Correlations below, which provide further support for keeping the two domains separate).

**Early Parenthood.** Table A.4 demonstrates the frequencies of the early parenthood domain. Across the three time points, more than 90% youth scored 2 points. However, whereas youth who scored 2 points (no child) slightly decreased over time, youth who scored 1 point (one child) was 4% higher at the second follow-up compared to the baseline and the first follow-up.

Table A.4. Frequency of Resilience Domains: Early Parenthood

|                               | 0<br>(two or more<br>children) | 1<br>(one child) | 2<br>(no child) |
|-------------------------------|--------------------------------|------------------|-----------------|
| Baseline ( <i>n</i> = 917)    | 1<br>(.1%)                     | 52<br>(5.7%)     | 864<br>(94.2%)  |
| Follow-up 1 ( <i>n</i> = 838) | 3<br>(.4%)                     | 47<br>(5.6%)     | 788<br>(94%)    |
| Follow-up 2 ( <i>n</i> = 821) | 0                              | 79<br>(9.6%)     | 742<br>(90.4%)  |

**Homelessness.** Table A.5 presents the frequencies of the homelessness domain. 99% of youth scored 1 point (living with someone<sup>18</sup>) at baseline. At the

<sup>18</sup> Specific information is available in measures (p.53).

first follow-up time points and the second follow-up, youth who scored 1 point (82%, 62%) decreased and youth who scored 2 (independent living; 16%, 35%) points increased compared to the baseline.

Table A.5. Frequency of Resilience Domains: Homelessness

|                               | 0<br>(homeless) | 1<br>(living with someone) | 2<br>(independent living) |
|-------------------------------|-----------------|----------------------------|---------------------------|
| Baseline ( <i>n</i> = 917)    | 2<br>(.2%)      | 903<br>(99%)               | 7<br>(.8%)                |
| Follow-up 1 ( <i>n</i> = 827) | 18<br>(2.2%)    | 677<br>(81.9%)             | 132<br>(16%)              |
| Follow-up 2 ( <i>n</i> = 813) | 22<br>(2.7%)    | 506<br>(62.2%)             | 285<br>(35.1%)            |

**Substance Use.** Table A.6 demonstrates the frequencies of the substance use domain. Distributions of scores were very similar between the baseline and the first follow-up; approximately two-thirds of youth scored 2 points (no use at all) and almost one-third of youth scored 0 point (use and no treatment). At the second follow-up, although not much change was observed in the distribution, youth who scored 2 points (70%) slightly increased.

Table A.6. Frequency of Resilience Domains: Substance Use

|                               | 0<br>(use and no treatment) | 1<br>(use and treatment) | 2<br>(no use at all) |
|-------------------------------|-----------------------------|--------------------------|----------------------|
| Baseline ( <i>n</i> = 917)    | 296<br>(32.7%)              | 37<br>(4.1%)             | 571<br>(63.2%)       |
| Follow-up 1 ( <i>n</i> = 835) | 244<br>(29.2%)              | 26<br>(3.1%)             | 565<br>(61.6%)       |
| Follow-up 2 ( <i>n</i> = 818) | 229<br>(28%)                | 19<br>(2.3%)             | 570<br>(69.7%)       |

**Criminal Activity.** Table A.7 presents the frequencies of the criminal activity domain. Across the three time points, more than 90% of youth demonstrated 2 points (no charges) and 7% of youth demonstrated 0 point (charge

and court involvement). However, a slight decrease in 0 point and 1 point, and a slight increase in 2 points were observed over two years although the changes were minimal.

Table A.7. Frequency of Resilience Domains: Criminal Activity

|                               | 0<br>(charge and court<br>involvement) | 1<br>(charge and no court<br>involvement) | 2<br>(no charges) |
|-------------------------------|----------------------------------------|-------------------------------------------|-------------------|
| Baseline ( <i>n</i> = 917)    | 66<br>(7.3%)                           | 16<br>(1.8%)                              | 820<br>(90.9%)    |
| Follow-up 1 ( <i>n</i> = 836) | 60<br>(7.2%)                           | 10<br>(1.2%)                              | 766<br>(91.6%)    |
| Follow-up 2 ( <i>n</i> = 817) | 55<br>(6.7%)                           | 9<br>(1.1%)                               | 753<br>(92.2%)    |

**Optimism.** Table A.8 demonstrates the frequencies of the optimism domain. 30% of the sample scored 2 (strongly optimistic) points at all three time points. And only about half scored 1 (optimistic) point at all three times and the percent of youth with 0 (not optimistic) point decreased slightly from 18% to 14% at the second follow-up.

Table A.8. Frequency of Resilience Domains: Optimism

|                               | 0<br>(not optimistic) | 1<br>(optimistic) | 2<br>(strongly optimistic) |
|-------------------------------|-----------------------|-------------------|----------------------------|
| Baseline ( <i>n</i> = 917)    | 163<br>(17.9%)        | 479<br>(52.5%)    | 271<br>(29.7%)             |
| Follow-up 1 ( <i>n</i> = 839) | 139<br>(16.6%)        | 463<br>(55.2%)    | 237<br>(28.2%)             |
| Follow-up 2 ( <i>n</i> = 819) | 116<br>(14.2%)        | 476<br>(58.1%)    | 227<br>(27.7%)             |

**Preparedness for Independent Living.** Table A.9 demonstrates the frequencies of the preparedness for independent living domain. At baseline, 53%

of the youth scored 1 (somewhat prepared) point and 23% scored either 0 (not prepared at all) or 2 (very prepared) points. At both follow-up time points, more youth scored 1 point and fewer youth scored 0 and 2 points compared to the baseline.

Table A.9. Frequency of Resilience Domains: Preparedness for Independent Living

|                               | 0<br>(not prepared at all) | 1<br>(somewhat prepared) | 2<br>(very prepared) |
|-------------------------------|----------------------------|--------------------------|----------------------|
| Baseline ( <i>n</i> = 917)    | 215<br>(23.4%)             | 490<br>(53.4%)           | 212<br>(23.1%)       |
| Follow-up 1 ( <i>n</i> = 839) | 129<br>(15.4%)             | 438<br>(52.2%)           | 272<br>(32.4%)       |
| Follow-up 2 ( <i>n</i> = 821) | 94<br>(11.4%)              | 390<br>(47.5%)           | 337<br>(41%)         |

## 2. Domain Correlations

The size and significance of the correlations among domains varied across time points (see Table A.10). For example, education and homeless demonstrated a small but positive relationship ( $r = .08, p < .05$ ) at baseline and small to small/medium negative relationships at both follow-ups ( $r = -.22, p < .01$ ;  $r = -.10, p < .05$ ).

Among functional domains, only substance use demonstrated a significant correlation with optimism ( $r = .08, p < .05$ ) at baseline. However, more functional domains presented significant correlations with optimism and preparedness for independent living at follow-ups (e.g., criminal activity, early parenthood, education, homelessness).

Table A.10. Correlations among Resilience Domains (significant correlations highlighted in yellow)

|          | 1.Educ | 2.Emp | 3.Parent | 4.Home | 5.Sub | 6.Crim | 7.Opt | 8.IL |
|----------|--------|-------|----------|--------|-------|--------|-------|------|
| Time1    |        |       |          |        |       |        |       |      |
| 2.Emp    | .002   |       |          |        |       |        |       |      |
| 3.Parent | .10**  | .03   |          |        |       |        |       |      |
| 4.Home   | .08*   | .07*  | .01      |        |       |        |       |      |
| 5.Sub    | -.02   | .02   | -.08*    | -.03   |       |        |       |      |
| 6.Crim   | .07    | -.01  | .01      | .02    | .18*  |        |       |      |
| 7.Opt    | .02    | .04   | -.03     | .04    | .08*  | .05    |       |      |
| 8.IL     | .002   | .06   | -.07*    | .001   | -.03  | -.04   | .14** |      |
| 9.EE     | .88**  | .12** | .11**    | .07*   | -.02  | .08*   | .003  | -.01 |
| Time2    |        |       |          |        |       |        |       |      |
| 2.Emp    | -.06   |       |          |        |       |        |       |      |
| 3.Parent | .18**  | .13** |          |        |       |        |       |      |
| 4.Home   | -.22** | .03   | -.16**   |        |       |        |       |      |
| 5.Sub    | .10**  | .02   | -.06     | .04    |       |        |       |      |
| 6.Crim   | .08*   | .01   | .02      | -.001  | .17** |        |       |      |
| 7.Opt    | .07    | .01   | .04      | .006   | .08*  | .07*   |       |      |
| 8.IL     | -.08*  | .03   | -.10**   | .18**  | .04   | .01    | .08*  |      |
| 9.EE     | .76**  | .29** | .25**    | -.15** | .09** | .11**  | .07   | -.06 |
| Time3    |        |       |          |        |       |        |       |      |
| 2.Emp    | .04    |       |          |        |       |        |       |      |
| 3.Parent | .21**  | .13** |          |        |       |        |       |      |
| 4.Home   | -.10*  | .19** | -.21**   |        |       |        |       |      |
| 5.Sub    | .01    | .07*  | -.06     | .07*   |       |        |       |      |
| 6.Crim   | .09*   | .05   | .01      | .05    | .13** |        |       |      |
| 7.Opt    | .05    | .08*  | .04      | .04    | .09*  | .02    |       |      |
| 8.IL     | -.03   | .10** | -.07*    | .22**  | .09*  | -.02   | .16** |      |
| 9.EE     | .57**  | .60** | .25**    | .07*   | .05   | .08*   | .13** | .01  |

\*\*  $p < .01$ , \*  $p < .05$ , 1.Education, 2.Employment, 3.Parenthood, 4.Homelessness, 5. Substance abuse, 6. Criminal activity, 7.Optimism, 8.Preparedness for independent living, 9.Employment+Education.

At baseline, early parenthood was not significantly related to employment whereas education ( $r = .10, p < .01$ ) and the combined domain were significantly related to parenthood ( $r = .11, p < .01$ ). Education was significantly related to substance use ( $r = .10, p < .01$ ) whereas employment was not at the second

follow-up (time2). The combined domain was significantly related to substance use ( $r = .09, p < .01$ ).

### 3. Resilience Score Inter-correlations

Correlations among the three resilience scores were also investigated to check if the three different scores reflected the same resilience construct. As seen in Table A. 11, the three different resilience scores were significantly related with large effect sizes suggesting the three different scoring strategies may represent the same construct.

Table A.11. Correlation among Three Resilience Scores

|                  | 1.Eight Domains | 2.Seven Domains |
|------------------|-----------------|-----------------|
| Time1            |                 |                 |
| 2. Seven domains | .91**           |                 |
| 3. Six Domains   | .84**           | .70**           |
| Time 2           |                 |                 |
| 2. Seven domains | .93**           |                 |
| 3. Six Domains   | .88**           | .76**           |
| Time3            |                 |                 |
| 2. Seven domains | .94**           |                 |
| 3. Six Domains   | .91*v           | .79**           |

\*\*  $p < .01$

The eight domains resulted in the largest effect size with the seven domains throughout the three time points ( $r = .91, .93, .94, p < .01$ ). It also resulted in the second largest effect sizes with six domains over the time points ( $r = .84, .88, .91, p < .01$ ). Correlations between the seven domains and six domains were lowest throughout the three time points ( $r = .70, .76, .79, p < .01$ ).

## **Summary**

Education and employment are distinct domains in this study. Previous studies that used composite scores of resilience also separated education and employment (Daining & DePanfilis, 2007; Jones, 2012). When they are combined, it does not capture changes in education and employment at different times. In this study, youth reported more employment and less education over time; employment became salient as they grew older. As suggested by Masten and Powell (2003), new domains become salient as youth grow older.

Based on the results of correlations among the three total scores of resilience, it was supported that the three different ways of resilience composite scores were all possible to represent resilience. However, eight domains presented strong relationships with both seven and six domains whereas the other two demonstrated relatively weaker relations. Therefore, this study utilized the eight domains to operationalize resilience.

## Appendix B. Examination of Multicollinearity among Continuous Variables

To test for the presence of multicollinearity, correlations among continuous variables were examined. Results of correlations among included variables were presented in table B.1. There are no variables that are highly associated; all correlations were less than .56.

Table B.1. Results of Correlations among Continuous Variables

|             | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8           | 9           | 10          | 11          | 12           |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 2           | <b>-.08*</b> |              |              |              |              |              |              |             |             |             |             |              |
| 3           | .01          | -            |              |              |              |              |              |             |             |             |             |              |
| 4           | .002         | <b>.17**</b> |              |              |              |              |              |             |             |             |             |              |
| 5           | -.06         | <b>-.07*</b> | <b>.56**</b> |              |              |              |              |             |             |             |             |              |
| 6           | <b>-.09*</b> | <b>.09**</b> | <b>.24**</b> | <b>.12**</b> | <b>.36**</b> |              |              |             |             |             |             |              |
| 7           | .04          | .03          | .002         | -.04         | -            |              |              |             |             |             |             |              |
| 8           | -.01         | .01          | <b>-.07*</b> | -.04         | <b>.09**</b> | -.04         |              |             |             |             |             |              |
| 9           | -.06         | -.02         | .01          | -.06         | .01          | <b>-.07*</b> | <b>.18*</b>  |             |             |             |             |              |
| 10          | .03          | .04          | .001         | -            | .02          | -.04         | .06          | <b>.10*</b> |             |             |             |              |
| 11          | .03          | -.02         | -.01         | <b>.14**</b> | .02          | .02          | .03          | .06         | <b>.25*</b> |             |             |              |
| 12          | .02          | -.06         | .002         | -.04         | <b>.07*</b>  | -.03         | <b>-.12*</b> | -.06        | .03         | <b>.07*</b> |             |              |
| Resilience1 | .02          | <b>.08*</b>  | <b>-.33*</b> | -.04         | .03          | .04          | <b>.09*</b>  | .02         | -.03        | -.03        | .01         |              |
| Resilience2 | -.07         | <b>.11*</b>  | <b>-.29*</b> | -.04         | <b>-.07*</b> | -.04         | <b>-.11*</b> | .03         | .02         | .07         | <b>.11*</b> | .05          |
| Resilience3 | .01          | <b>.10*</b>  | <b>-.24*</b> | -.04         | <b>-.07*</b> | -.04         | -.03         | -.01        | .03         | <b>.11*</b> | .04         | <b>-.09*</b> |

\*\*  $p < .01$ , \*  $p < .05$ , 1.Age, 2.Religiosity, 3.Externalizing behavior problem, 4.Internalizing behavior problem, 5.N/foster home placements, 6.N/of group home placements, 7.Contact with birth mother, 8.Contact with birth father, 9.Friends support, 10.Social support, 11.Foster care parents support, 12.Contact with social worker

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