RESILIENCE AMONG YOUTH EMANCIPATING FROM FOSTER CARE:

CUMULATIVE RISK AND PROTECTION AND THEIR RELATIONSHIP WITH

POSITIVE ADAPTATION

By

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ABSTRACT OF THE DISSERTATION

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Research on youth emancipating from foster care typically emphasizes risk and maladaptation among this vulnerable population. Few studies examine competent, or resilient, functioning among these youth, and the factors that enable them to succeed. The primary goal of the present study was to explore how accumulation of risk and protective factors contributed to resilient functioning among youth leaving foster care in one state. Specifically, this research aimed to examine whether cumulative risk and protection independently affected resilience, or whether the impact of protection was contingent upon the level of risk. This study utilized data from the Mental Health Service Use of Youth Leaving Foster Care (VOYAGES) study, a longitudinal cohort study of older youth in the custody of the Missouri Children's Division. Binary logistic regression was used to examine the study hypotheses.

Results indicated that resilience was a common occurrence among youth in this sample. Specifically, 81% exhibited resilience in the domain of mental health; 70%

exhibited resilience in the domain of substance use; 78% exhibited resilience in the domain of criminal involvement; and 67% reported being employed or at school. Furthermore, over two-thirds of the youth exhibited resilience in at least three of the above mentioned domains. Females, and youth who were still in foster care at age 19, were more likely to exhibit resilient functioning.

Further analyses revealed that higher cumulative risk was associated with decreased likelihood of resilience in the domains of mental health and substance use, but not in the domain of criminal involvement. In contrast, higher cumulative protection was associated with increased likelihood of resilience in the domain of substance use, but not in the domains of criminal involvement and mental health. When youth overall resilience was examined, both cumulative risk and cumulative protection presented a significant contribution in the predicted direction. However, there was no evidence that the impact of protection on resilience was contingent upon the level of risk. These results emphasize the differential impact of risk and protection on different aspects of youth functioning, and support the need for specificity in resilience research.

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Chapter 1

Introduction

In recent years, considerable research attention has been paid to young people who "emancipate" from foster care after reaching the age of maturity (Courtney, 2009; Jones, 2011; Yates & Grey, 2012). These young people face the challenges of adulthood with few resources, and often exhibit a myriad of dysfunctional outcomes (Courtney, 2009; Pecora et al., 2006). Nonetheless, some youth demonstrate relatively uncompromised, or "resilient", functioning as they leave the child welfare system and begin to live independently (Daining & DePanfilis, 2007; Yates & Grey, 2012). Little research examines the phenomenon of resilience among emancipating foster youth, and even fewer studies explore how the interplay between risk and protective factors contributes to its development (Yates & Grey, 2012). The goal of the present study is to assess the prevalence of resilience among this vulnerable population, and explore how risk and protective factors interact to predict resilient functioning.

Youth Emancipating From Foster Care

Every year, about 25,000 youth "age-out" from the foster care system and find themselves on their own (U.S. Department of Health and Human Services, 2011). This period comes with the expectation that "one will take responsibility for oneself, make independent decisions, and become self-sufficient" (Keller, Cusick & Courtney, 2007, p. 453). Mastering such tasks, however, may be challenging for young people who abruptly transition out of foster care and into young adulthood (Lemon, Hines & Merdinger, 2005). Unlike counterparts in the general population, foster youth must negotiate this

transition suddenly, and without guarantees of continuing support from family members (Collins, Spencer, & Ward, 2010; Keller et al., 2007). In addition, some are ill prepared for assuming adult roles, in terms of educational completion, job readiness, and basic skills needed for independent living (Courtney, 2009; Keller et al., 2007; Montgomery, Donkoh, & Underhill, 2006). Overall, foster youth tend to be significantly disadvantaged across a number of domains, as they approach and negotiate the transition to independence (Courtney, 2009).

Given such disadvantage, it is not surprising that many foster youth struggle as they leave the child welfare system and begin to live on their own (Courtney, 2009; Pecora et al., 2006). According to recent studies, as many as 50% fail to obtain a high school diploma by the age of 18, only 30% enroll in higher education institutions, and less than 5% successfully complete a four-year degree (Brandford & English, 2004; Stott & Gustavsson, 2010; Reily, 2003; Wolanin, 2005; Yates & Grey, 2012). Between 25% and 50% face unemployment, and even more experience underemployment (Naccarato, Brophy, & Courtney, 2010; Stott & Gustavsson, 2010). Many youth live below the poverty line, and at least 30% receive need-based government assistance (Courtney, 2009; Hughes et al., 2008; Stott & Gustavsson, 2010). Estimates of homelessness range from 10% to 40%, and a significant number of youth experience housing instability (Courtney, 2009; Dworsky & Courtney, 2009; Pecora et al., 2005; Stott & Gustavsson, 2010). In addition, some struggle with mental health problems, and report elevated rates of substance use (Barth, 1990; Cook, 1992; McMillen et al., 2005; Pecora et al., 2005). Finally, between one third and one half of the youth report being arrested or jailed

following their emancipation from care (Brandford & English, 2004; Courtney, 2009; Hughes et al., 2008; Reilly, 2003).

Research on youth emancipating from foster care typically emphasized risk and maladaptation among this population (Daining & DePanfilis, 2007; Yates & Grey, 2012). However, not all youth succumb to developmental disruption during this vulnerable time period. Some demonstrate relatively uncompromised, or resilient, functioning as they leave the foster care system and embark on adult roles (Daining & DePanfilis, 2007; Samuels & Pryce, 2008). As noted by Merdinger and colleagues (2005), "little literature examines former foster youth who go on to lead healthy and productive lives, and the contributing factors that enabled them to succeed" (p. 868). Daining & DePanfilis (2007) further noted that a "focus on resilience among former foster youth offers an alternative perspective to the deficit model commonly used in studies of this vulnerable population" (p. 1169). The purpose of the present research is to shed light on the phenomenon of resilience among youth emancipating from foster care, and examine specific conditions associated with its development.

The Construct of Resilience

The construct of resilience has been defined in the literature as a "pattern of positive adaptation in the context of significant risk or adversity" (Masten & Powel, 2003, p. 4). Much of resilience research has focused on the relationship between risk factors, protective factors, and the presence or absence of positive adaptation among the studied group (Anctil, McCubbin, O'Brien, & Pecora, 2007; Luthar, Cicchetti, & Becker, 2000; Masten, 2001). In most investigations, positive adaptation has been conceptualized as the achievement of "stage-salient developmental tasks" or major expectations of a

given society for individual behavior at a specific age (Luthar, 2006; Masten, 2001; Masten & O'Dougherty Wright, 2010). Risk factors have been defined as those increasing the probability of dysfunction; in contrast, protective factors have been defined as those increasing the probability of competence (Kaplan, 1999; Luthar, 2006; Masten & O'Dougherty Wright, 2010). The presence of risk and protective factors has been examined at different levels of the system, including individual characteristics, family environment, and extra-familial context (Luthar, 2006; Masten & Coatsworth, 1998).

Research on resilience among emancipating foster youth has been relatively infrequent (Daining & DePanfilis, 2007; Hass & Graydon, 2009; Samuels & Pryce, 2008; Yates & Grey, 2012). Existing studies in this area have been exploratory, investigating a narrow spectrum of this phenomenon. For instance, several studies have focused specifically on educational resilience – that is, youth were defined "resilient" based solely on their participation in higher education (Hass & Graydon, 2009; Hines, Merdinger, & Wyatt, 2005). While this approach may be useful for identifying the correlates of a specific favorable outcome, it fails to capture the multidimensional nature of resilience. Among emancipating foster youth, educational success may come at the expense of vulnerability in other areas, such as compromised mental health or elevated rates of substance use (Merdinger, Hines, Lemon, & Wyatt, 2005; Samuels & Pryce, 2008). As noted by Yates & Grey (2012), "in the context of...adversity, resilience reflects multiform competence characterized by both the absence of psychopathology and the presence of adaptive capabilities to negotiate age-salient issues effectively" (p. 476). Based on such views, a broader perspective on resilience is needed to accurately assess this phenomenon.

Risk and Protection Accumulation

Many studies in the area of resilience examined a small number of risk and protective factors as isolated correlates of positive adaptation. Nonetheless, a successful transition to adulthood is likely to involve interactions, interconnections, and mutual influences among different aspects of the environment (Keller et al., 2007). As stated by Keller and colleagues (2007), "a probabilistic perspective on development implies that individual adaptation is a function of the combination and interaction of multiple contributing factors" (p. 456). Thus, the prospects for resilient functioning among emancipating foster youth may be best evaluated in analyses simultaneously incorporating various risk and protective influences.

The cumulative risk strategy is uniquely suited to examine multiple risk and protective factors in one's environment (Raviv, Taussig, Culhane, & Garrido, 2010; Sameroff et al., 1987). Several studies have shown that risk factors co-occur within individuals, and that the number of risks experienced predicts developmental outcomes better than any singular risk (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Fraser, Kirby, & Smokowski, 2004; Raviv, et al., 2010). In recent years, a similar logic has been applied to the concept of protection. It has been argued that protective factors are also likely to co-occur, and that their positive effects may be amplified when accumulated (Fraser et al., 2004). For instance, Daigle and colleagues (2010) suggested that "…an isolated protective factor might only have increased the odds of resilienc(e) by a small proportion; however, as additional protective factors are experienced, the odds of being resilient to stressors…substantially increase[s]" (p. 330). Overall, recent investigations

provide a substantial degree of support for the usefulness of cumulative strategies in explaining variations in developmental outcomes.

Risk, Protection, and Resilience: The Nature of the Effect

Although resilience is widely believed to result from interplay between risk and protective factors, the nature of such interplay is not well understood (Fraser et al., 2004; Luthar, 2006). Some scholars propose the existence of "main" or "additive" effects, in which risk directly increases the probability of dysfunction, whereas protection directly increases the probability of competence. The key notion in such models is the consistent compensatory effect of protection across all levels of risk (Fraser et al., 2004; Luther, 2006). In other words, "additive" models propose that if enough protection is accumulated, it is likely to offset or compensate even for the highest risk (Fraser et al., 2004).

Other scholars disagree with "additive" models of resilience, claiming that they are overly simplistic. Instead, they propose the existence of "interactive" models, in which the impact of protection is contingent upon the level of risk (Burt & Paysnick, 2012; Luthar, 2006). The challenge in such models is that the nature of the interactions is often inconsistent. Some studies demonstrate that protection tends to be more important when risk is relatively high (Luthar, 2006). For instance, high IQ was found more advantageous for children exposed to high life stress, as compared to those exposed to low life stress (Garmezy et al., 1984). Others report opposite findings, suggesting that in the presence of severe stress, positive adaptation may not be possible, even for persons possessing considerable strengths. In one such study, Sameroff and colleagues (1998) reported that individual protective factors had no influence on children's competence

when they were exposed to high environmental risk. In another study, Jaffe and colleagues (2007) similarly reported that individual strengths distinguished between resilient and non-resilient youth under the condition of low, but not of high, risk (Jaffee, Caspi, Moffit, Polo-Tomas, & Taylor, 2007).

One reason for such inconsistency may be the use of different risk and protective factors in different investigations (e.g. high IQ versus high self-esteem). The choice of a specific risk or protective factor is likely to influence the study findings, and in some cases, lead to inconsistent conclusions. For instance, it is conceivable that high IQ benefits high-risk children the most, whereas high self-esteem is most beneficent for low-risk children. In this case, the presence of seemingly contradicting findings is simply the result of different choices of protective factors.

Investigating the cumulative impact of risk and protection can help overcome such difficulties, as cumulative strategies possess several advantages over individual approaches. First, such strategies are less influenced by variations in study designs (i.e. the choice of specific risk or protective factors), leading to improved ability to generalize findings across studies. Second, considerable evidence suggests that developmental outcomes are best predicted by the overall amount of risk and protection in the environment, rather than by any singular factor. To this end, Yates & Grey (2012) have noted: "just as resilience is configural, so, too, are risk and protection, such that it is not any one feature of prior experience, but rather the constellation of features that is most strongly related to adaptive organizations in young adulthood" (p. 488). All in all, cumulative strategies offer an efficient, and highly effective, way of assessing multiple risk and protective influences in youth environments. To the author's knowledge, no prior

studies of emancipating foster youth examined how cumulative risk interacts with cumulative protection to predict resilient functioning.

The Present Study

The first goal of the present study is to describe the phenomenon of resilience among youth emancipating from foster care. As noted above, such investigations have been infrequent, and often defined resilience in a limited manner (i.e. examining one domain of competence only, such as enrollment in higher education). The present study proposes a more comprehensive approach, incorporating several domains of functioning deemed important for this population. Because both *absence* of psychopathology and *presence* of adaptive functioning are indicative of resilience among foster youth (Yates & Grey, 2012), the following domains have been included in the analysis: resilience to mental health problems, substance use, and criminal involvement, as well as youth education and employment outcomes. Each domain was assessed individually, and in combination with others, to provide an extensive account of youth functioning.

The second goal of this study is to examine the ways in which cumulative risk and protection relate to resilient functioning. Specifically, the following question is examined: does cumulative protection predict resilience regardless of the level of risk, or does risk moderate the relationship between protection and resilience? The answer to this question may have important practice implications, particularly in terms of identifying youth for whom interventions fostering protection might be most beneficent.

The final goal of the present study is methodological in nature - compare two analytic models for describing the relationship between risk and protective factors and youth resilience. The first model examines risk and protective variables individually, to

assess their unique contribution to resilient functioning. The second model examines the cumulative influences of risk and protection on youth resilience. Both models have been used in previous studies, and each possesses distinct strengths and limitations. Systematic comparison of these models can help assess whether risk and protection accumulation predicts resilience over and above the impact of individual risk and protective variables.

This research utilizes data from the Mental Health Service Use of Youth Leaving Foster Care (VOYAGES) 2001-2003 study, a longitudinal cohort study of older youth in the custody of the Missouri Children's Division. The study sample consisted of youth residing in eight large counties in Missouri, who were approximately 17 years old when the data collection began. These youth were followed longitudinally through age 19, to examine how they fared as they transitioned-out of the foster care system.

Chapter 2

Theoretical Perspectives in Resilience Research

Defining and Measuring the Construct of Resilience

Resilience has been commonly defined as a "pattern of positive adaptation in the context of significant risk or adversity" (Masten & Powel, 2003, p. 4). Embedded in this definition are two fundamental judgments: (1) that a person is doing reasonably well, and (2) that now or in the past, there has been a significant risk or adversity to overcome (Kaplan, 1999; Luthar et al., 2000; Masten & Powel, 2003). At first glance, this definition appears relatively simple; however, decades of research in this area have demonstrated that this is not the case (Kaplan, 1999; Kinard, 1998). The purpose of this section is to review major developments in the definition and measurement of resilience as a distinct scientific construct.

One of the earliest debates in the area of resilience was whether it should be considered a trait or a state (Luthar et al., 2000; Reich, Zautra, & Hall, 2010). In early writings on this topic, resilience has been conceptualized primarily as a trait, or characteristics possessed by certain individuals allowing them to succeed in the face of adversity (e.g. Anthony, 1974; Cohler, 1987). In subsequent writings, however, the trait model has been explicitly rejected (Luthar et al., 2000; Luthar, 2006; Masten, 1994; 2001; Reich et al., 2010). Instead, a process model has been proposed, in which resilience has been conceptualized as a "state," or a successful outcome (Luthar, 2006; Masten & Powel, 2003; Reich et al., 2010).

The view of resilience as an outcome has brought important developments to the research and theory in this area. First, it has been recognized that positive adaptation is never permanent; rather, it involves a "developmental progression with new vulnerabilities and strengths emerging with changing life circumstances" (Luthar, 2006, p. 741). Second, it was acknowledged that resilience may derive from factors external to the person, such as healthy family relations or community resources (Luthar, 2006; Luthar et al., 2000; Reich et al., 2010). As a result, scholars began to view resilience as a "product of a dynamic interplay between adversity and a variety of both personal and environmental assets that suppress or mediate risk" (Fraser et al., 2004, p. 23).

<u>Measurement Strategies</u>

As mentioned above, the definition of resilience requires two conditions to be met: (1) that individuals are exposed to significant risk or adversity, and (2) that they exhibit positive adaptation (Masten & Powel, 2003). Each condition must be reliably assessed if valid judgments of resilience are to be made. Nevertheless, a reliable assessment of both risk and positive adaptation has proven to be a difficult task (Kaplan, 1999; 2005). The sections below describe commonly used strategies for the assessment of these conditions, and discuss their applicability for the present investigation.

1. *Measuring Risk*

The measurement of psychosocial risk in resilience research generally followed three broad approaches (Luthar & Cushing, 1999; Naglieri & LeBuffe, 2005). The first approach involves the measurement of negative life events, typically through multiple-item questionnaires or similar techniques. The second approach involves the presence of a single stressor (chronic or acute in nature), such as child maltreatment, parental

separation, or parental mental illness. The third approach involves "a collection of specific discrete risk indices, primarily of a sociodemographic nature…that [are] aggregated to derive an overall estimate of the adversity experienced" (Luthar & Cushing, 1999, p. 130).

Each approach possesses distinct strengths and limitations. For instance, negative life events questionnaires do not require locating specific high risk and control samples, and tend to be relatively easy to administer (Luthar & Zigler, 1991). Furthermore, such questionnaires typically provide researchers with continuous scores, allowing for comparisons to be made between high-risk and low-risk groups. On the other hand, these measures possess important limitations, such as inclusion of both "uncontrollable" and "controllable" events, as well as significant heterogeneity of items in terms of their potential impact on resilience (Luthar & Cushing, 1999; Masten et al., 1988).

The second approach to measuring risk - identifying specific stressful life circumstances - is also somewhat problematic. The main challenge with this approach is that such stressors (i.e. child maltreatment, parental psychopathology, experiences of foster care) are distal in nature − that is, they operate primarily by influencing more proximal variables. It is possible that some well-functioning individuals within high-risk samples are not actually resilient, but rather, have experienced lower proximal risk (Richters & Weintraub, 1990 in Luthar & Cushing, 1999). For instance, some children of mentally ill parents may experience insensitive caregiving, while others may not. In such cases, resilient children may simply be those who have not experienced proximal risk (i.e. insensitive caregiving) in the presence of a distal stressor (i.e. parental mental illness). Although such claims clearly have merit, some scholars have argued that they directly

relate to the search for protective factors (Luthar et al., 2000). These scholars assert that the question of why certain people experience low proximal risk in the presence of high distal risk is the very "core" of resilience research (Luthar & Cushing, 1999).

The third approach to assessing risk involves integrating multiple socio-demographic indices, such as low parental education or income, single-parent household, minority group membership, etc. Such "constellations" reflect frequent coexistence of risk factors, as it occurs in real-world setting. However, this approach is subject to a number of difficulties, such as potential overlap between items (e.g. poverty and minority status), varying degrees of seriousness, and uncertainly with regards to proximal influences. On the other hand, summative approaches tend to be more reliable than individual risk factors, and they typically account for more variance in outcomes than any single risk (Luthar & Cushing, 1999; Sameroff et al., 1987).

2. *Measuring Positive Adaptation*

The bulk of resilience research describes positive adaptation in terms of the achievement of "stage-salient developmental tasks" (Luthar, 2006; Masten & O'Dougherty Wright, 2010). Before proceeding with the discussion of measurement strategies, a brief description of such tasks is warranted. Developmental tasks are broadly defined as "the standards for behavior in different domains expected for people as they mature in a given society or culture" (Masten & O'Dougherty Wright, 2010, p. 216). For instance, between infancy and preschool, children are expected to form secure attachments, develop language skills, and develop the ability for self control and compliance. In middle childhood, academic achievement and peer acceptance are viewed as important domains of adjustment. In adolescence, individuals are expected to develop

more intimate friendships, and form a cohesive sense of self (Masten & Coatsworth, 1998). In young adulthood, domains such as employment, enrollment in higher education, and independent living are typically viewed as indicators of successful functioning (Masten et al., 2004). Overall, stage-salient developmental tasks reflect the developing capacity for individual adaptation, as well as changes in context and opportunities afforded by the environment (Masten & O'Dougherty Wright, 2010). In the present study, the assessment of positive adaptation will be informed by prominent developmental tasks in emerging adulthood.

Numerous strategies have been used for the assessment of positive adaptation in resilience research (Luthar et al., 2000; Luthar & Cushing, 1999; Masten & Powel, 2003). Such strategies can be divided into three broad groups. The first approach involves utilizing multi-item scales, such as those measuring prosocial behaviors, academic achievement, and other indicators of competence. The second approach is categorical in nature, measuring the presence or absence of serious psychopathology. The third approach involves the integration of diverse aspects of adjustment using composite scores or similar strategies (Luthar & Cushing, 1999). An overview of each approach is presented below, and their strengths and limitations are discussed.

The use of multi-item scales typically involves measuring indicators of well-being and/or success in specific developmental tasks. An example of this approach would be the assessment of academic success using standardized achievement tests (Shonk & Cicchetti, 2001). However, some difficulties are associated with this approach, such as deciding what constitutes high competence on a continuous scale. This issue is complicated further by the fact that reference groups are frequently the samples

themselves, rather than the general population. Utilizing such a strategy raises an important question – "might the most competent of the high-risk individuals within a particular sample simply be the best of a generally poorly functioning group?" (Luthar & Cushing, 1999, p. 140). In other words, having good adjustment relative to other individuals within a high-risk sample does not necessarily indicate high competence in a more general sense (Luthar & Cushing, 1999; Masten & Tellegen, 2012).

One way of resolving such problems involves the use of commonly accepted cut-off scores based on norms in the general population. Individuals scoring in the normal range for a particular measure would be considered resilient, while those scoring in the problem range would be considered non-resilient (Kinard, 1998). However, not all measures have cut-off scores that can be readily applied to a particular group. In addition, some standardized cut-off scores may produce small samples of individuals who qualify to be labeled "resilient" (Walsh, Dawson, & Mattingly, 2010). Therefore, many scholars acknowledge the need for using alternative measurement strategies (i.e. sample characteristics), despite conceptual difficulties associated with their use (Cicchetti & Rogosch, 1997; Kinard, 1998; Luthar et al., 2000; Walsh et al., 2010).

Another issue to be considered relates to the notion of excellence. Scholars have raised the question whether a label of resilience requires excellent, or merely average, performance (Luthar et al., 2000). The answer to this question has been somewhat inconsistent over the years. Some scholars have argued that for a person to be considered "resilient," he or she must exhibit better than average functioning in one or multiple domains (Tolan, 1996). Others suggested that resilience does not require excellence; rather, it simply requires that individuals do "reasonably well" (Jaffee & Gallop, 2007;

Luthar et al., 2000). Over the last two decades, an increasing number of scholars have adopted the latter view of resilience. One reason for this was recognizing that it may not be realistic to expect better than average performance from severely deprived or traumatized persons (Masten, 2001; Masten & Powell, 2003).

A different approach to measuring positive adaptation has been based on the absence of serious psychopathology (e.g. psychiatric disorders, substance abuse, etc.) (Kaplan, 1999; Luthar et al., 2000; Luthar & Cushing, 1999; Masten & Powel, 2003). This approach seems sensible when the risk context under study is strongly associated with certain pathological outcomes (Kaplan, 2005; Luthar, 2006). However, some scholars consider it to be less stringent, as the absence of pathology does not necessarily imply the presence of positive adjustment (Kaplan, 2005; Luthar & Cushing, 1999). Other scholars argue that if resilience is defined by being disorder-free across the lifetime, such standard may actually be higher than the "performance level" in the general population (Luthar & Cushing, 1999). Furthermore, for certain risk conditions, measuring the absence of pathology may be the most sensible way of assessing resilience (Kaplan, 2005). For instance, if parental alcoholism is strongly associated with offspring substance use, than *not* using harmful substances is the primary outcome of interest which qualifies to be an indicator of resilience.

The final strategy for the assessment of positive adaptation involves the integration of resilience indicators across different domains of functioning (Cicchetti & Rogosch, 1997; Luthar & Chusing, 1999; Luecken & Gress, 2010). Oftentimes, a collection of indicators is selected based on conceptual considerations, and a composite score is then developed using such indicators (e.g. Cicchetti & Rogosch, 1997; Daining &

DePanfilis, 2007). The rationale for this approach is rooted in the idea that resilience must be assessed across multiple domains of functioning (Luthar, 2006; Masten & Tellegen, 2012). Many scholars believe that truly "resilient" individuals should demonstrate success in several developmental tasks, rather than in just one (Jaffe & Gallop, 2007; Masten & O'Dougherty Wright, 2010).

Although composite scores are clearly important for the study of resilience, some dangers are associated with their use (Luthar et al., 2000). First, domains included in the composite score should be conceptually tied in to the risk influence under study. Second, these domains must relate to each other in a theoretically meaningful way (Luthar & Zelazo, 2003). If these basic conditions are violated, composite scores will be essentially meaningless. However, even if such conditions are met, it may be unclear what exactly is denoted by specific scores on a composite measure. As indicated by Kinard (1998), "using a single overall index of resilience across different domains…certainly simplifies data analysis, but this strategy may obscure differences in different areas of functioning, as well as differences in factors associated with resilience in different areas" (p. 674).

The use of composite scores is one possible way of capturing the multidimensional nature of resilience. Another commonly used approach is dichotomously categorizing individuals as "resilient" or "non-resilient" based on several domains of functioning (Luecken & Gress, 2010). This approach has several advantages, such as simplifying statistical analysis and interpretation; but it also presents important challenges. The greatest danger in utilizing this approach is a potential loss of information and risk of misleading results (Luecken & Gress, 2010; Yates & Grey, 2012). This is particularly relevant when labels of resilience are based on somewhat arbitrary

cut-off scores. When dichotomized approaches are used, scholars must provide an explicit justification for their standards for resilience labels (Kaplan, 2005). Such standards must reflect conceptual considerations, as well as previous research in the area.

3. *Measuring Risk and Positive Adaptation in the Present Study*

The above reviewed strategies for measuring risk and positive adaptation possess both strengths and limitations. The choice of a particular strategy depends on the topic under study, as well as practical constraints. In the present study, psychosocial risk was assessed by combining two different approaches. The study sample was initially identified based on the presence of a single stressful life circumstance – experiences of foster care. As demonstrated in numerous studies, foster care is associated with familial adversities, such as child maltreatment, parental psychopathology, and severe socioeconomic disadvantage (Courtney, 2009). Furthermore, being placed in out-of-home settings may introduce additional risks, such as revictimization. Experiences of foster care can, therefore, be conceptualized as a "stressful circumstance" which places individuals at risk for maladaptation. Nonetheless, foster care constitutes a "distal" risk factor – that is, young people in care vary considerably in terms of the actual adversity experienced. To increase precision in the assessment, additional risk factors were examined using a collection of discrete indices (i.e. parental mental illness and substance use, school transitions). The inclusion of such indices allows a more accurate account for the adversity experienced by the youth, increasing the validity of "resilience" and "non-resilience" labels.

The assessment of positive adaptation was, likewise, based on a combination of approaches. First, the choice of competence indicators was informed by stage-salient

developmental tasks. During the transition to adulthood, employment and/or enrollment in higher education are typically considered to be markers of success (Burt & Raysnick, 2012); therefore, such indicators were included in the assessment of competent functioning. Second, dysfunctional outcomes common among emancipating foster youth were also taken into account. As previously noted, these youth often experience mental health problems, elevated rates of substance use, and criminal involvement (Courtney, 2009). Avoiding such pitfalls will, therefore, be considered indicative of resilience in the present investigation.

In consent with scholars who argued for increased specificity in resilience research (e.g. Luthar et al., 2000; Masten, 2001), different aspects of resilient functioning were examined both separately and in combination with each other. Avoidance of mental health problems, substance use, and criminal involvement, as well as being employed or at school (i.e. "productive adult"), were investigated in this study. Within each competence domain, individuals were dichotomously categorized as "resilient" or "non-resilient". While this approach possesses certain limitations (i.e. potential loss of information due to dichotomization); it is deemed appropriate for the types of variables included in the present study (e.g. presence or absence of serious psychopathology).

In addition to dichotomous categorizations within each competence domain, a composite score combining the four domains was used as an additional indicator of resilience. The use of composite scores enables assessment of resilience across multiple domains (e.g. Luthar, 2006; Masten & Tellegen, 2012), responding to the argument that truly "resilient" individuals should do reasonably well in many areas of their lives. A dual approach of assessing each domain individually, as well as using a composite score,

capitalizes on the strengths of these approaches, while minimizing potential biases associated with each.

Theoretical Frameworks in Resilience Research

<u>Overview of Theoretical Frameworks</u>

Numerous theoretical frameworks have guided resilience research since its introduction to the scientific community (Kaplan, 1999; Luthar et al., 2000). Many of these frameworks were based on Bronfenbrenner's (1979) ecological model, describing human development as embedded in "constantly evolving interactions" between individuals and their environments (Campbell, Dworkin, & Cabral, 2009). The model subdivides environmental influences into multiple systems, with varying degree of proximity to the developing person. Specifically, the individual level encompasses bio-psycho-social characteristics of the person; the microsystem involves interactions between individuals and members of their immediate environments; the exosystem includes organizational and social structures; and the macrosystem contains societal norms, beliefs, and expectations. The model also includes the chronosystem which encompasses changes occurring over time between individuals and their environments (Brondenbrenner, 1994; Campbell et al., 2009). Although each system has the capacity to influence development, more proximal systems (i.e. microsystem) are thought to exercise greater impact than the more distal ones (i.e. macosystem) (Fraser et al., 2004).

Bronfenbrenner's view of development as embedded in multiple environmental contexts has greatly influenced resilience researchers (Fraser et al., 2004; Luthar, 2006). Numerous theoretical frameworks adopted the notion of multiple systems in an effort to explain the development of competence in the face of adversity (Luthar et al., 2000;

Masten & Powell, 2003). For instance, one commonly used framework has been proposed by Werner and colleagues (Werner & Smith, 1982, 1992). According to this framework, risk and protective factors that affect high-risk persons operate at three broad levels of the system: the individual (e.g. traits such as intelligence, self-esteem, sociability), the family (e.g. presence or absence of parental warmth, parental supervision, child maltreatment), and the community (e.g. neighborhood characteristics, presence of supportive adults and/or peers). Major sources of stress increase vulnerability to negative outcomes, whereas major sources of protection increase the probability of resilience (Kaplan, 1999). According to this framework, if one's environment is characterized by relatively few risk factors and a significant number of protective factors, the developmental outcomes are likely to be positive. If, however, there is an abundance of risk and a limited amount of protection, the probability of developmental dysfunction increases.

Conceptually similar models have been proposed by other scholars, such as Garmezy (1985) and Masten & Coatsworth (1998). Garmezy (1985) described three major categories of protective factors promoting the likelihood of resilience among high-risk individuals. These factors included: (1) individual attributes, such as intelligence, positive views of the self, and easy temperament (2) family qualities, such as parental warmth and cohesion, positive expectations, and high parental involvement, and (3) supportive systems outside the family, such as strong social networks and community resources. Masten & Coatsworth (1998) also proposed a framework in which resilience was related to three broad types of factors: individual characteristics, familial factors, and extra-familial context. Such "triarchic" frameworks have served to organize much of

resilience research over the last four decades, allowing integration of findings across diverse investigations (Fraser et al., 2004; Luthar, 2006; Luthar et al., 2000).

A different approach to understanding resilience can be derived from the cumulative risk model proposed by Sameoff and colleagues (1987). According to this model, the more risk factors are present in one's environment, the higher the potential is for maladaprive outcomes (Begle, Dumans, & Hanson, 2010). Unlike models based on the work of Bronfenbrenner (1979), the cumulative risk model argues that no risk factors are more important than others. Instead, a simple accumulation of risks (regardless of context, or degree of proximity) will ultimately result in maladaptation (Flouri & Kallis, 2007). The model also proposes that under the conditions of severe risk, positive adaptation may not be possible, even for individuals possessing considerable strengths (Jaffee et al., 2007). The basic premise is that, at a certain point, the risk becomes so great that it "overwhelms" the adaptive capacities of the person (Flouri & Kallis, 2007). Implicitly, this model suggests that resilience may be the product of somewhat lower risk, rather than the "compensating" effect of protection.

Both the cumulative risk model, and frameworks derived from the ecological model have been widely used in resilience literature. Numerous investigations identified salient risk and protective factors at different levels of the system, including individual, familial, and extra-familial contexts (for a review, see Luthar, 2006; Masten & Coatsworth 1998). However, the notion that proximal factors exert a greater influence on development compared with distal ones has received support primarily for indices of dysfunction (Bronfenbrenner, 1994). Inadequate parental practices, for example, have been identified as strong predictors of child difficulties - more so than any community-

level factors (Fraser et al., 2004; Luthar, 2006). However, with respect to competence, the effect of proximity appears to be less prominent (Bronfenbrenner, 1994). For instance, successful academic performance has been strongly associated with environmental factors (i.e. positive school environment, peer characteristics), and the impact of such factors may be no less important than some familial influences (Luthar, 2006; Masten & Coatsworth, 1998).

Theoretical Contributions of the Present Study

Existing research in the area of resilience has focused primarily on children and adolescents (Luthar, 2006; Luthar & Zelazo, 2003; Masten, 2001). The period of emerging adulthood has received less attention, both from empirical and theoretical standpoints. As noted by Luecken & Gress (2010), "little is known about specific developmental experiences that influence the ability to transition successfully into young adulthood" (p. 242). Masten and colleagues (2004) further noted that "…conditions for positive change during the transition to adulthood require a more solid base of knowledge than presently exists…" (p. 1092).

In emerging adulthood, a unique set of variables may be associated with resilient functioning. On the one hand, individual characteristics may become important as young people are taking on the challenges of adult life (Luecken & Gress, 2010). Attributes such as a sense of control, self-efficacy, and the ability to plan and pursue goals are strongly associated with positive outcomes during this period (Burt & Paysnick, 2012; Hines et al., 2005; Luecken & Gress, 2010; Masten et al., 2004). On the other hand, a variety of environmental factors, such access to community resources, also become important as youth mature (Luthar, 2006). In addition, a number of familial characteristics continue to

exert their influence when youth transition to independence (Burt & Paysnick, 2012; Masten et al., 2004). Therefore, a comprehensive framework is needed to understand resilience in the emerging adulthood. The majority of existing studies did not employ such comprehensive assessments, focusing, instead, on specific risk and/or protective influences. The present study will address this gap by including both risk and protective factors at three levels of the system: (1) individual characteristics; (2) familial environment; and (3) extra-familial context.

The second contribution of the present study relates to the empirical assessment of different resilience models. As noted earlier, the cumulative risk model implicitly suggests that when the environmental risk is high, protective factors may no longer contribute to resilient functioning. In other words, this model supports the presence of "interactive" effects in a specific direction (i.e. higher protection will be associated with increased likelihood of resilience only under the condition of relatively low risk). In contrast, some ecologically-based frameworks suggest that a sufficient amount of protection may offset even the highest risk. These frameworks support the presence of "main" or "additive" effects (i.e. that higher protection will be associated with increased likelihood of resilience across all levels of risk). The purpose of the present study is to examine which model more parsimoniously describes the development of resilience among youth emancipating from foster care.

Chapter 3

Review of Empirical Literature

Youth Emancipating from Foster Care: Background and Policies

In 2010, more than 400,000 children were in the foster care system across the United States (USDHHS, 2011). In most cases, children enter foster care due to experiences of abuse and neglect, although some may enter care due to other parental dysfunction, parental death, or child mental health needs (Pecora et al., 2006; Simmel, 2012). On average, children stay in foster care for a period of 25 months, and are typically placed in relative or non-relative foster homes (USDHHS, 2011). Children generally exit the system through the following venues: reunification with parents, adoption, relative or guardianship placement, and emancipation.

Adolescents constitute one of the largest groups of children in foster care (Pecora, Roller White, Jackson, & Wiggins, 2009). In 2010, about 30% of all children in care were ages 14 or older (USDHHS, 2011). Among adolescents, about 50% live in congregate care (i.e. group homes, residential treatment facilities), and the remaining youth live in relative or non-relative foster homes, as well as in independent living arrangements (Congressional Research Service, 2008). Adolescents have higher rates of placement instability compared with younger children, and many experience multiple placements, as early as their first six months of entering care (Congressional Research Service, 2008).

Although attempts are made to minimize youths` length of stay in care, finding permanent placements for adolescents is often difficult (Stott, 2012). Research indicates

that youth not reunified with parents, and not placed with relatives, are most likely to exit foster care through emancipation (Stott, 2012). Emancipation has been defined as "a legal event that occurs when the court formally discharges a young person from the state's custody based on the youth's chronological age" (Unrau, Font, & Rawls, 2012, p. 76). The age of emancipation varies from state to state, ranging from 18 to 23. At present, the majority of the states (34) allow youth to remain in foster care until their 21st birthday (NRCYD, 2012).

In recent decades, federal policies have been established to address the needs of youth emancipating from foster care. The first federal policy directed specifically toward this population was established in 1986. This law, the Federal Independent Living Program (PL 99-272), authorized $70 million a year to state child welfare agencies to provide independent living preparation services for youth who were likely to "age-out" of foster care at 18. However, such services were restrictive because they were primarily targeted for youth ages 16 to 18, and could not be used by youth residing in kinship care or adoptive homes, as well as those receiving in-home services. Furthermore, the federal funding was capped at $70 million per year, which resulted in a lack of services for many eligible youth (Cook & Sedlak, 1995).

The John H. Chaffee Foster Care Independence Act (FCIA) was passed in 1999, replacing the former Independent Living legislation. The Chafee Act increased the federal allocation of monies for independent living services from $70 million to $140 million, and expended the eligibility criteria of youth who can be served by Chafee-funded programs (Congressional Research Service, 2008). This legislation enabled states to provide independent living services at a younger age, and states could now use a

portion of their funds to extend Medicaid coverage, as well as provide housing and other forms of assistance to youth between the ages of 18 and 21. This law took a more realistic look at the youth population, acknowledging that youths` needs do not end at age 18, when many of them exit the child welfare system.

More recently, two additional legislation initiatives were passed to support foster youth in transition: the Chaffee Education and Training Voucher (ETV) program; and the Fostering Connections to Success and Increasing Adoptions Act. The ETV program provided annual financial support (up to $5,000) to foster youth enrolled in higher education institutions. The Fostering Connections to Success and Increasing Adoptions Act allowed states to receive federal reimbursement for maintenance payments made on behalf of foster youth until age 21. Foster youth living in states that take advantage of this legislation could benefit by voluntarily remaining in the state's custody until their 21st birthday (Unrau et al., 2012).

Prevalence of Resilience among Emancipating Foster Youth

Despite the positive trajectory of services engendered by the above mentioned legislation initiatives, research continues to indicate that foster youth exhibit numerous difficulties as they transition to independence (Courtney, 2009). Such perceptions may be at least partially related to the deficit bias present in studies of this population (Yates & Grey, 2012). Only recently, scholars began to examine manifestations of competence among emancipating foster youth, and the results of such studies have been encouraging (Daining & DePanfilis, 2007; Yates & Grey, 2012). Nonetheless, the majority of these investigations have been based on small, non-representative samples (e.g. Daining & DePanfilis, 2007; Hass & Graydon, 2009; Merdinger et al., 2005; Samuels & Pryce,

2008). Because empirical research in this area is limited, the prevalence of resilience among emancipating foster youth has been difficult to establish. The studies reviewed below are not exclusive to foster youth, and are sometimes drawn from related populations (i.e. maltreated children). Deficit-focused investigations of foster youth are also included, as these provide indirect estimates of the prevalence of resilience.

Research on Maltreated Children

Although not all youth in foster care have been victims of child maltreatment, a history of maltreatment is very common among this population (Pecora et al., 2006; Simmel, 2012). Given the high occurrence of maltreatment among youth in foster care, estimates of resilience among survivors of abuse and neglect may serve as proxy for its prevalence among young people emancipating from the foster care system.

The last three decades have seen a remarkable increase in research on resilience among maltreated children (see Walsh et al., 2010 for a review). However, variations in the timing of the assessment, the measures used, and the standards for resilience labels, make it difficult to obtain accurate prevalence rates for this phenomenon (Bloger & Patterson, 2003; Jaffe & Gallop, 2007; Walsh et al., 2010). Overall, when a single measure of competence is used (i.e. high academic achievement, peer acceptance), rates of resilience among maltreated children and youth range from 10 to over 90 percent (Haskett, Nears, Sabourin Ward, & McPherson, 2006; Heller, Larrieu, D'Imperio, & Boris 1999; Walsh et al., 2010). In contrast, when multiple domains of functioning are assessed simultaneously, the rates drop to between 0 and 27 percent (Haskett et al., 2006; Jaffe & Gallop, 2007; Walsh et al., 2010).

Research on resilience among adult survivors of child maltreatment has been somewhat more infrequent. Available studies reveal comparable or slightly higher estimates of resilience, as compared with those found among children (Haskett et al., 2006). For instance, DuMont, Spatz Widom, & Czaja (2007) reported that approximately 30% of individuals in their sample met the criteria for resilience based on success in multiple domains of functioning (i.e. employment, education, absence of psychopathology, etc.). In another study which utilized a similar methodology, prevalence rates were approximately 22% (McGloin & Widom, 2001). As with child and adolescent samples, when labels of resilience were based on single, rather than multiple domains, prevalence rates increased substantially, often reaching 70 or 80 percent (Bolger & Paterson, 2003).

<u>Research on Foster Youth</u>

Experiences of foster care are associated with a range of difficulties among children, adolescents, and young adults. Youth growing up in foster care tend to experience multiple hardships, including disruption of family ties, placement instability, frequent school transitions, and insensitive caregiving on the part of the foster parents (Drumaret, Coppel-Batsch & Couraud, 1997; Lenz-Rashid, 2006; Orme & Buehler, 2001). These experiences often result in various emotional and behavioral difficulties, limiting the development of competence among this population (Orme & Buehler, 2001).

Although research on emancipating foster youth has focused primarily on indices of dysfunction, existing studies indirectly inform the prevalence of resilience. In the domain of education, for example, less than 50% obtain a high school diploma by age 18. Furthermore, only 1% to 11% graduate from college with an associate's or bachelor's

degree (Casey Family Foundation, 2006, 2007, 2008; Courtney, 2009; Dworsky & Courtney, 2010; Dworsky & Perez, 2010; Pecora et al., 2006). In the domain of employment, only about 20% of the youth manage to maintain a stable job for an extended period of time (Dworsky, 2005; Naccarato et al., 2010). With respect to homelessness, results are somewhat more encouraging - depending on the definitions and the samples used, between 60% and 90% report never experiencing homelessness (Courtney, 2009; Dworsky & Courtney, 2009; Pecora et al., 2005; Stott & Gustavsson, 2010).

When youth emotional well-being is considered, existing findings are disturbing. Emancipating foster youth report less emotional resilience than counterparts in the general population, as indicated by higher levels of psychological distress, and increased utilization of mental health services (Courtney, Piliavin, Grogan–Kaylor, & Nesmith, 2001; Pecora et al., 2005). To illustrate, McMillen and colleagues (2005) interviewed 373 youth preparing to leave foster care in one state. The Diagnostic Interview Schedule for DSM-IV was used to assess the prevalence of various psychiatric disorders. Results indicated that only 39% of the youth were disorder-free throughout their lifetimes, and 63% were disorder-free in the past year. In another investigation, emotional resilience appeared to be even less prevalent – in this study, only 46% of former foster youth had no psychiatric disorders in the past 12 months (Pecora et al., 2005).

With respect to substance use, findings are also somewhat discouraging. For instance, Pecora and colleagues (2005) have found that fewer foster care alumni were resilient to alcohol and drug dependence than youth in the general population. In their study, 89% of foster youth reported no alcohol dependence throughout their lifetimes, as

compared with 93% in the general population. Furthermore, only 79% of foster youth reported no drug dependence, as compared with 96% in the general population. In another research, former foster youth were followed for a period of three years to examine their adaptation to emerging adulthood (Jones, 2011). Results revealed that three years following discharge from care, as many as 50% had a drug and/or alcohol problem. Similarly, in a study by Vaughn and colleagues (2007), only 65% of foster youth were free of substance use disorder throughout their lifetimes. Comparisons revealed that foster youth used drugs and alcohol in similar rates to the general population; however, substance use *disorder* was disproportionately high among these youth. The authors concluded that foster youth who use illicit substances may have abuse/dependence issues, rather than merely experimental or recreational use.

Finally, resilience to criminal justice involvement appears to be less prevalent among emancipating foster youth than in the general population (Courtney, 2009). That said, the majority of the youth do not engage in criminal behaviors. For instance, in a study by Courtney & Dworsky (2006), 81% of youth leaving foster care reported never spending a night in a correctional facility during a period of 12 to 18 months. However, only 72% of the youth reported no arrests during this time period. Similar findings were reported in another study, where approximately 80% of former foster youth reported no arrests between discharge and age 19 (Vaughn, Shook, & McMillen, 2008).

The above reviewed research provides estimates of resilience in a number of individual domains, including education and employment, mental health, and criminal involvement. Notably missing from this review are estimates of resilience across multiple domains of functioning. As noted by Yates & Grey (2012), "…[foster] youth may

evidence meaningful discordance across external/behavioral and internal/psychological adjustment domains" (p. 476). For instance, some youth may demonstrate success in education and/or employment tasks, while simultaneously experiencing high levels of emotional distress (Hines et al., 2005). In contrast, others may demonstrate high levels of emotional resilience, despite notable deficiencies in the achievement on state-salient developmental tasks (Farruggia, Greenberg, Chuansheng, & Heckhausen, 2006; Yates & Grey, 2012). These results support the notion that resilience must be assessed across multiple domains of functioning, if meaningful conclusions about the studied population are to be made (Luthar, 2006; Masten & Tellegen, 2012).

Only two published studies of youth emancipating from foster care examined resilient functioning across multiple domains (Daining & DePanfilis, 2007; Yates & Grey, 2012). In the first study, the authors assessed resilience using a composite score combining six domains of functioning: education, employment, and avoidance of early parenthood, homelessness, drug use, and criminal activity (Daining & DePanfilis, 2007). Higher composite scores were indicative of increased resilience; scores ranged from 1 to 12, with a median of 8. Contrary to the expectation, about 70% of the youth had scores of 7 or higher, indicating moderately high levels of resilience for the sample as a whole. However, this study was limited by a small, non-representative sample, absence of psychological indicators, and limited assessment of risk experienced by the youth. It is possible that youth in this sample were characterized by relatively low levels of adversity, which explains the unexpectedly high levels of resilience.

A recent study by Yates & Grey (2012) attempted to overcome these limitations. This study utilized latent profile analysis to identify patterns of competence among 164

youth emancipated from the California foster care system. Measures of resilience included a number of external indicators, such as education and employment; as well as several internal indicators, such as self-esteem, and depressive symptoms. Results revealed that youth could be classified into four distinct profiles: maladapted, resilient, externally resilient, and internally resilient. Maladapted youth were characterized by adjustment difficulties in both external and internal domains; in contrast, resilient youth were characterized by relatively high levels of competence in both domains. Youth defined as externally resilient were well-adjusted in the domains of education, employment, and civic engagement; but endorsed lower levels of emotional well-being. Youth defined as internally resilient exhibited relatively high levels of emotional well-being, despite significant deficits in several external indicators. Similarly to the previous study, the largest group of youth (47%) exhibited resilient profiles, demonstrating relatively high competence across most indicators. This study possessed a number of methodological strengths; however, its primary goal was to identify distinct profiles of resilience, rather than explore how risk and protective factors interacted to predict their development.

Risk and Protective Factors in Resilience Research

Resilient functioning is believed to result from a complex interplay between risk and protective factors present in one's environment. Risk factors have been defined in the literature as "measurable characteristics in a group of individuals or their situation that predict negative outcomes on specific outcome criteria" (O'Dougherty Wright & Masten, 2005, p. 19). Protective factors, on the other hand, have been defined as the "quality of a

person, or context, or their interaction that predicts better outcomes, particularly in situations of risk or adversity" (O'Dougherty Wright & Masten, 2005, p. 19).

The sections below provide a broad overview of the risk and protective factors deemed important for the development of resilience among various at-risk populations. The organizational framework of Masten & Coastsworth (1998) is adopted in the present study, which divides risk and protective factors into three broad groups: individual characteristics, familial factors, and extra-familial context. The first section presents a variety of risk factors, and discusses their impact on resilience. The second section presents an overview of protective factors, and discusses their contribution to resilient functioning.

The goal of this review is to provide a rationale for the selection of variables included in the present analysis. The risk and protective factors discussed have been selected primarily based on their relevance to the studied population. However, as research on resilience among emancipating foster youth has been infrequent, findings were sometimes drawn from studies of related high-risk populations (i.e. victims of child maltreatment). In addition, it was not possible to focus exclusively on adolescent and young adult samples, as studies utilizing such samples have been less prevalent. Therefore, the findings described below were sometimes drawn from studies of younger children.

Risk Factors

A variety of risk factors have been associated with increased maladaptation, or decreased competence, across the lifespan. Such risks include individual vulnerabilities (i.e. low IQ), familial characteristics (i.e. parental psychopathology), and extra-familial

context (i.e. community violence) (Luthar, 2006; Masten & Coarsworth, 1998; Masten & Tellegen, 2012). Because individual vulnerabilities are often less responsive to intervention, this research focuses primarily on familial and extra-familial risks.

One well-known risk factor for the development of psychopathology is exposure to child maltreatment (Bloger & Patterson, 2003). Child maltreatment has been associated with a variety of dysfunctional outcomes, including mental disorders, problematic peer relationships, criminal involvement, and substance use (Bloger & Patterson, 2003; Cicchetti & Valentino, 2006; Jaffe & Gallop, 2007). For instance, in one nationally representative study, child sexual abuse was associated with a variety of psychiatric disorders among adult victims, including depression, posttraumatic stress disorder, and social phobia (Molnar, Buka & Kessler, 2001). In another study, history of physical maltreatment was associated with increased rates of major depression and substance abuse (MacMillan et al., 2001). Several studies have also demonstrated a relationship between child physical abuse and adult criminal behaviors (Brodsky et al., 2001; Ehrensaft et al., 2003; Rosenbaum & Bennett, 1986). Finally, one prospective study has found that individuals who were abused or neglected as children had higher rates of dysthymia and antisocial personality disorder compared with non-maltreated controls (Horowitz, Widom, McLaughlin, & White, 2001).

Recent investigations have focused specifically on the relationship between child maltreatment and resilience (Walsh et al., 2010). For instance, Cicchhetti & Rogosch (1997) examined resilience among maltreated and non-maltreated middle school children. Resilience was measured by a composite score based on multiple domains of competence. The study demonstrated that maltreated children were less likely to be

resilient compared with their non-maltreated peers. In a study examining adult resilience, individuals with verified maltreatment cases fared significantly worse than subjects without verified maltreatment on indicators of educational and economic attainment, criminal offending, and behavioral and mental health (Mersky & Topitzes, 2010). Furthermore, while many adult victims of maltreatment appeared to function well in specific domains, a large majority did not achieve criteria for resilience when functioning was assessed across domains. Non-maltreated individuals were more than twice as likely to attain five or more positive outcomes compared with their maltreated counterparts.

A history of mental illness in the family has also been associated with various adjustment problems (Cowan & Cowan, 2006; Luthar, D'Avanzo, & Hites, 2003). Children of parents diagnosed with mental illness were found to be at risk for psychiatric disorders, delinquency, substance abuse, and school failure (Hammen, 2003; Leverton, 2003; Luthar et al., 2003). For instance, one study has shown that parental major depression was associated with depression, social phobia, and disruptive disorders in offspring (Biederman et al., 2001). Another study similarly found that having a parent with major depression increased the risk for offspring psychopathology (Nomura, Warner, & Wickramaratne, 2001). Other forms of parental mental illness, such as bipolar disorder, schizophrenia, and personality disorders, were, likewise, linked to a range of child problems (Leverton, 2003).

A history of substance abuse in the family also appears to predict offspring dysfunction. Children growing up in such families exhibit elevated rates of psychopathology, difficulties in academic and social functioning, and engagement in risky behaviors (Drummond & Fitzpatrick, 2000; Zucker, Wong, Puttler, & Fitzgerald,

2003). For example, children whose parents or siblings engaged in serious alcohol or illicit drug use were found more likely to engage in these behaviors themselves (Biederman, Faraone, Monuteaux, & Feighner, 2000; Brook, Whiteman, Gordon, & Brook, 1988; Hill, Shen, Lowers, & Locke, 2000). In addition, children of substance abusing parents were found to exhibit high rates of aggressive and delinquent behaviors (Williams, Ayers, Van Dorn, & Arthur, 2004).

Criminal involvement in the family may, likewise, exert a negative impact on individual functioning (Dallaire & Wilson, 2010; Miller, 2006; Dallaire, 2007). For instance, children of incarcerated parents tend to exhibit delinquent behaviors (Dannerbeck, 2005), psychological maladjustment (Wilbur et al., 2007), and school difficulties (Trice & Brewster, 2005). However, such risks may not be causal in nature, but rather, reflect a variety of co-occurring problems. Additionally, more research is needed to explore the relationship between family criminality and the functioning of children no longer residing with their biological families.

Although family risks must be considered when examining resilience, contextual factors may also exert an impact. For youth with foster care backgrounds, experiences in the system may be particularly important. First, the age in which children enter foster care may have important implications on development. Because most children enter care due to experiences of maltreatment, early age of entry is likely to be indicative of early maltreatment. According to several studies, early onset of maltreatment may be particularly detrimental for child functioning (Manly, Kim, Rogosch, & Cicchetti, 2001). Foster youth exposed to early maltreatment may, therefore, fare worse than counterparts maltreated later in life.

In addition to adverse impact of early maltreatment, youth entering foster care at an early age may experience multiple placements, re-enter care multiple times, and spend longer periods of time in the system. This may be particularly relevant for young people who eventually exit care through emancipation. Although some "early enterers" may find stable, long-term placements, research shows that this does not happen often among youth who ultimately emancipate from foster care (Courtney, 2009; Courtney & Dworsky, 2006). Placement instability, as well as multiple instances of entry to care, may be associated with dysfunctional outcomes, and ultimately, with decreased likelihood of resilience (Keller et al., 2007; Raviv et al., 2010; Stott, 2012).

Community-level factors should also be considered when examining the functioning of foster youth. One risk factor which may influence youth development is multiple school transitions. Several studies have shown that foster youth tend to experience frequent school changes throughout their stay in the system (Sullivan, Jones, & Mathiesen, 2010). Frequent school changes are a well-known educational risk factor, which may impede youth learning and academic progress (Conger & Rebeck, 2001; Smithgall, Gladden, Howard, George, & Courtney 2004). Furthermore, frequent school changes have been associated with various behavioral problems, such as internalizing and externalizing psychopathology (Sullivan et al., 2010). Based on such findings, it is reasonable to assume that frequent school transitions may decrease resilient functioning among emancipating foster youth.

In sum, characteristics of the family environment, as well as numerous extra-familial factors, are strongly associated with adjustment difficulties among children, adolescents and young adults. It is important to note that foster youth tend to experience

these risks at disproportionally high rates (Courtney, 2009; Raviv et al., 2010). Nonetheless, not all foster youth are exposed to these risks in equal amounts; therefore, an accurate assessment of their presence is critical for understanding resilience. As previously noted, experiences of foster care constitute a "distal" risk factor; consequently, a more "fine-grained" assessment of the actual risks experienced increases the validity of "resilience" and "non-resilience" labels.

Protective Factors

Although risk factors are important for understanding resilience, protective factors are the "core" of such investigations (Luthar, 2006). Protective factors are thought to increase the probability of resilience, and may be present at different levels of the system (i.e. individual characteristics, family environment, and extra-familial context) (Luthar, 2006; Masten, 2001; Masten & Coatsworth, 1998). The present study includes a number of protective influences that were selected based on salience for youth in foster care, as well as their potential malleability.

The bulk of research in the area of resilience has focused on individual characteristics associated with competence in the face of adversity (Kaplan, 1999; Luthar, 2006; Luthar et al., 2000). Average or above average intelligence is one attribute that has been studied extensively in this regard (Luthar, 2006; Masten & O'Dougherty Wright, 2010). Several studies have shown that high intellectual ability was associated with a range of positive outcomes, including academic achievement and pro-social behaviors (Masten, 1994; Masten et al, 1999). Such protective effects of cognitive ability have been more pronounced among disadvantaged persons compared with their non-disadvantaged peers (Masten & Coatsworth, 1998; Masten et al., 1999). Nonetheless, the presence of

such effects is far from consensus - some studies reported no association between cognitive ability and competent functioning. DuMont and colleagues (2007), for example, have found no relationship between IQ scores and resilient functioning among adult victims of child maltreatment. In another study of survivors of child maltreatment, resilience to adult psychopathology was unrelated to adolescent cognitive abilities (Collishaw et al., 2007). Such studies demonstrate that high intellectual skills may not always afford protection, particularly for survivors of relational trauma (Masten & O'Dougherty Wright, 2010). Nonetheless, existing research does suggest a potential for protective effects of intelligence, warranting further examination among youth emancipating from foster care.

The ways in which people interpret their experiences, and the assumptions that they make about the world, can also influence their adjustment. For instance, the ability to perceive benefit from negative events has been associated with improved functioning among individuals exposed to trauma. Such ability predicted a number of positive outcomes, including enhanced closeness with others, changed life priorities, enhanced self-efficacy, and increased spirituality (Barskowa & Oesterreich, 2009; McMillen & Fisher, 1998). According to several studies, individuals with serious health conditions who were able to find benefits in their illness were less likely to experience depression and anxiety (Ho, Cahn, & Ho, 2004; Siegel & Schrimshaw, 2007; Urcuyo, Boyers, Carver, & Antoni, 2005). Similar trends were identified in studies of bereaved individuals, indicating that the capacity to find benefit predicted less emotional distress following the loss of a loved one (e.g. Davis, Nolen-Hoeksema, & Larson, 1998).

Studies examining perceived benefit from experiences of child maltreatment have been somewhat less frequent. In one study, McMillen, Zuravin & Redeout (1995) examined 154 low- income women who have been sexually abused as children. This study revealed that a high degree of perceived benefit from maltreatment was associated with several indicators of adjustment, such as higher self-esteem, less relationship anxiety, and more comfort with depending on others. However, no differences emerged between those perceiving some benefit from their maltreatment experiences, and those perceiving no benefit at all.

The contribution of perceived benefit to the adjustment of foster youth requires further examination. The author was unable to locate any studies directly examining this issue, with the exception of one qualitative investigation indicating that successful foster youth reframed emotional pain tied to their experiences as a source of strength and pride (Samuels & Pryce, 2008). Studies conducted with other high-risk populations (i.e. victims of maltreatment) provide a rationale for hypothesizing a protective influence of high benefit finding.

A related factor which may contribute to resilient functioning is assumptions about the world following traumatic experiences (Janoff-Bulman, 1989; Kaller et al., 2008). According to Janoff-Bulman (1989), the assumptive world is a "basic conceptual system developed over time that provides us with expectations about ourselves and the world so we might function effectively" (p. 114). Some studies indicate that traumatic experiences may result in negative perceptions of the world, which, in turn, may be associated with a variety of difficulties (Monson, Gradus, La Bash, Griffin, & Resick, 2009). One study examining survivors of sexual abuse has found an association between

dysfunctional beliefs about the world and increased symptoms of posttraumatic stress disorder (Wenninger & Ehlers, 1998). Other studies were unable to find a relationship between perceptions of the world and individual adjustment (Kaller et al., 2008). To my knowledge, the protective effect of positive beliefs about the world has not been examined among youth emancipating from foster care.

Religious beliefs have long been considered important to the life and functioning of young people in the U.S. (Scott, Munson, McMillen, & Ollie, 2006). According to several studies, religious involvement may exert a protective influence on high-risk youth (Luthar, 2006; Regnerus, 2003; Regnerus, Smith, & Fritsch, 2003; Scott et al., 2006). Religious adolescents were found to have less psychosocial problems, including depression and substance use (Miller, Davies, & Greenwald, 2000; Miller & Gur, 2002). Among youth emancipating from foster care, religious service attendance has been associated with decreased odds of engagement in sexual activity, as well as current cigarette use (Scott et al., 2006). Based on such findings, it is hypothesized that religious involvement may be associated with increased resilience among youth leaving the foster care system.

Individual strengths are clearly important for understanding resilient functioning; however, they cannot fully explain this phenomenon (Luthar, 2006; Masten, 2001). One of the most important factors associated with resilience are positive relationships with family members (Luthar, 2006; Masten, 2001; Masten & Coatsworth, 1998). Research has consistently shown that strong family relationships are critical for maintaining good adjustment in the face of adversity (Luthar, 2006; Masten & Tellegen, 2012). Early studies in the area of resilience have found that close relationships with at least one

parental figure was highly protective against a range of maladaptive outcomes (i.e. Garmezy, 1974; Werner & Smith, 1992). Recent studies similarly emphasized the importance of supportive and responsive parenting as one of the most robust predictors of resilient functioning (Luthar, 2006; Luthar & Zezalo, 2003; Masten, 2001).

Among youth in foster care, maintaining relationships with biological family members is a controversial topic (Collins, Paris, & Ward, 2008). On the one hand, biological families of foster youth often face multiple problems, which may make contact with them injurious for the youth (McWey & Mullis, 2004). On the other hand, maintaining a relationship with relatives often has benefits, especially as youth transition to independence (Courtney, 2009; Courtney et al., 2001). According to several studies, biological family members serve as the primary source of support for many youth emancipating from foster care (Courtney, 2009). Furthermore, a close relationship with at least one relative has been associated with improved outcomes among some young people (Keller et al., 2007). These findings suggest that positive relationships with biological family members may exert a protective influence on emancipating foster youth.

Consistent connections with caring, non-relative adults may also be beneficent for high-risk youth (Lemon Osterling & Hines, 2006; Munson & McMillen, 2009). Such connections may be obtained through structured mentoring programs, or through relationships that develop naturally (Munson & McMillen, 2009). Although research on the impact of mentoring has been sparse, emerging literature suggests that mentoring relationships promote self esteem, improved educational attainment, and decreased substance use and aggressive behavior (Lemon Osterling & Hines, 2006). Resilience

research has also long emphasized the importance of supportive adults in the lives of children who managed to overcome adversity (Drapeau, Saint-Jacques, Lepine, Begin, & Bernard, 2007; Lemon Osterling & Hines, 2006; Masten & Tellegen, 2012; Merdinger et al., 2005; Werner, 1992).

Among youth emancipating from foster care, supportive adults may be particularly influential (Lemon Osterling & Hines, 2006; Merdinger et al., 2005) One study examined the relationship between having a mentor at age 18, and psychological outcomes at ages 18.5 and 19 (Munson & McMillen, 2009). At age 18.5, former foster youth who had a mentor reported fewer depressive symptoms, lower levels of stress, and higher life satisfaction. At age 19, youth involved in long-term mentoring relationships were less likely to be arrested. However, long-term mentoring relationships were unrelated to substance use or current employment among youth in this sample. Other qualitative and quantitative investigations similarly emphasized the benefits of having consistent connections with supportive adults during the period of transition to adulthood (Drapeau et al., 2007; Lemon Osterling & Hines, 2006; Merdinger et al., 2005).

Lastly, two school-related factors may be associated with resilience among youth leaving foster care. Satisfaction with school is one such factor. It has long been recognized that satisfaction with school may be important for healthy youth development (Elmor & Huebner, 2010). According to some studies, dissatisfaction with school is among the most common reasons that students provide for dropping out (U.S. Department of Education, 1990). In contrast, satisfaction with school has been associated with positive outcomes, such as better grades, and reduced problem behaviors (Baker & Maupin, 2009; Huebner & Gilman, 2006). In one study that examined secondary school

students, very high school satisfaction was associated with higher GPA, higher global life satisfaction, hope, and internal locus of control. In addition, very high school satisfaction was associated with significantly less psychological problems among the students (Huebner & Gilman, 2006).

Involvement in positive extracurricular activities at school is also believed to confer protection for high-risk youth (Luthar, 2006; Peck, Roeser, Zarrett, & Eccles, 2008). Specific types of positive activities include sports, recreational programs, school and community clubs, volunteer service, music, etc. (Bartko & Eccles, 2003; Peck et al., 2008). Involvement in such activities has been linked with improved academic performance, increased psychological health, and reduced delinquency and substance abuse (Bartko & Eccles, 2003; Barber, Eccles & Stone, 2001; Mahoney, 1997). The protective influences of extracurricular activities is thought to be associated with factors such as increased skill development, enhanced self-concept and improved interpersonal relationships (Bartko & Eccles, 2003; Fong, Schwab, & Armour, 2006).

Among youth in the foster care system, involvement in extracurricular activities may be particularly influential. Such activities may provide youth with positive experiences, as well as opportunities for skill building often absent in their home environments. Furthermore, extracurricular activities may be advantageous for youth with relationship difficulties, as they may help rebuild interpersonal trust and offset avoidant tendencies (Fong et al., 2006).

The Impact of Risk and Protection: Additive and Interactive Models

Research on risk and protection and their relationship with resilient functioning has been expanding rapidly in recent years. Nonetheless, the majority of existing

investigations have focused on isolated correlates of resilience, such as one particular risk factor, or a specific protective influence (Luthar, 2006). Less attention has been given to the cumulative effects of risk and protection, and only a handful of studies examined cumulative protection in relation to cumulative risk (Flouri, 2008). The sections below briefly review existing research in this area and discuss its relevance for the present study.

The impact of cumulative risk on development has received increased attention over the past decade (Dekovic, 1999; Epstein, Botvin, Griffin, & Diaz, 2001; Flouri, 2008). A number of studies consistently found that individuals with high cumulative risk fared worse than individuals with low cumulative risk, regardless of the specific risks examined (e.g. Appleyard et al., 2005; Jaffe et al., 2007; Sameroff et al., 1998). In a pioneering research by Sameroff and colleagues (1987), cognitive, social, and emotional functioning of children of mentally ill mothers was investigated. A number of risk factors were assessed in this study, including parental practices, socioeconomic indicators, and stressful life events. Results revealed that children with high risk scores had significantly worse outcomes than children with low risk scores. More recently, Appleyard and colleagues (2005) provided further support for Sameroff's findings. These authors examined the impact of cumulative risk in childhood on problem behavior in adolescence. The risks examined included, among others, child maltreatment, family disruption, and low socioeconomic status. Findings have demonstrated that the more risk factors were present in the environment, the worse outcomes the children had.

Research on the impact of cumulative protection has been somewhat less frequent (Fraser et al., 2004). Nonetheless, several studies did show that protection tended to act in

a cumulative manner. For instance, one study has demonstrated that accumulation of protective factors in preadolescence decreased youth likelihood of being delinquent and supported their likelihood of being non-delinquent (van der laan, Veenstra, Bogaerts, Verhulst, & Ormel, 2010). In another study, accumulation of protective factors was significantly related with reductions in adolescent internalizing problems (Dekovic, 1999). Similar effects of protection have been found in other investigations, indicating that accumulation of protection lowered the probability of various dysfunctional outcomes (Farrington, Loeber, Jolliffe & Pardini, 2008; Sameroff et al., 1998).

A small number of studies examined the relationship between risk and protective factors, in an effort to confirm either additive, or interactive, models of resilience. For instance, Epstein and colleagues (2001) examined the impact of cumulative protection on adolescent alcohol use in the presence of different levels of risk. Results indicated that students with high cumulative risk scores engaged in more alcohol use compared with those with low risk scores. Conversely, students with high cumulative protection scores engaged in less alcohol use compared with those possessing low protection scores. Finally, for students with low risk, the level of protection did not affect most measures of alcohol consumption. In contrast, for moderate and high-risk students, increased protection was associated with decreased consumption.

An opposite pattern of findings has been reported in other investigations. Jaffe and colleagues (2007) examined resilient functioning among maltreated children, as measured by the absence of antisocial behaviors. The cumulative risk index consisted of factors such as maternal depression, parental substance use, social deprivation, and troubled sibling relationship. The protective factors examined were high IQ, and well-

adjusted temperament. Results indicated that under the condition of low risk, children possessing protective factors were more likely to be resilient. However, under the condition of high risk, protective factors were no longer associated with resilience. A different study specifically examining child welfare clients reported similar findings (Leon, Ragsdale, Miller, & Spacarelli, 2008). According to this study, youth with low levels of reported sexual abuse were able to benefit from involvement in extra-curricular activities. In contrast, youth with high levels of reported sexual abuse were unable to obtain similar benefits from involvement in these activities. It should be noted that none of the above described studies examined cumulative levels of protection - rather, they focused on the impact of specific protective influences.

Finally, at least one prior study has found no evidence of interactive effects between risk and protection levels in youth environments (Dekovic, 1999). This author examined the cumulative influences of risk and protective factors on youth behavior problems. Results revealed a significant main effect of cumulative risk on both externalizing and internalizing problems. Additionally, a significant main effect of cumulative protection was detected for internalizing problems. However, no significant interaction effects were found between cumulative risk and cumulative protection for any of the study outcomes.

In sum, there appears to be partial support in the literature for both "additive", as well as "interactive" models. Moreover, the specific direction of interactive effects tends to be somewhat inconsistent across studies, which may be partially related to the choice of specific risk or protective variables examined. The present study includes a

comprehensive assessment of youth cumulative risk and protection levels, in an attempt to establish the applicability of such models to youth emancipating from foster care.

The VOYAGES Study: Summary of Published Research

As indicated in the introduction section, the present study utilized data from the Mental Health Service Use of Youth Leaving Foster Care (VOYAGES) 2001-2003 study, a longitudinal cohort study of older youth in the custody of the Missouri Children's Division. This section summarizes previous research utilizing the VOYAGES data. Approximately 20 published articles were located; these studies are briefly summarized below.

Several studies focused on mental health service use among youth in the VOYAGES sample. In one study, youth were asked about their mental health service utilization, as well as their attitudes towards service receipt (Lee et al., 2006). In addition, open-ended questions were asked about youth experiences with mental health providers. Results indicated that youth reporting negative experiences with mental health providers had less positive attitudes towards services, but were not any more likely than other youth to have experienced changes in service use or medication after a period of six months. In another study, authors examined the contribution of several factors to black males` predisposition to seek mental health care (Scott, Munson, McMillen, & Snowden, 2007). Results revealed that youth who were still in foster care were more likely to seek mental health care, whereas those diagnosed with DSM-IV psychiatric disorder, and those adhering more to the norm of emotional control, were less likely to seek care. Two additional studies related to mental health service utilization were subsequently

conducted with this dataset (McMillen & Raghavan, 2009; Raghavan & McMillen, 2008).

At least three studies examined various psychiatric disorders among youth in the VOYAGES study. In one article, McMillen and colleagues (2007) examined lifetime and past year psychiatric disorders among 17 year-olds. Results indicated that nearly two-thirds of the youth had at least one psychiatric disorder throughout their lifetimes; and about one-third met the criteria for a psychiatric disorder in the past year. Several risk factors, such as experiencing multiple maltreatment types, were associated with the presence of psychiatric disorders. Noteworthy, this study did not examine psychiatric disorders in subsequent waves of data collection (i.e. when youth were 18 or 19 years of age).

A study conducted in 2010 focused specifically on depressive symptoms and examined their trajectories between ages 17 and 19 (Munson & McMillen, 2010). The data revealed three main trajectories: never-depressed; increasing depression; and decreasing depression. Youth in the increasing depression class were predominantly male, and tended to be employed at age 19. Youth in the decreasing depression class were predominantly female, highly maltreated, and with low levels of employment. Youth who were in school at age 19 were more likely to belong to the never-depressed class. One additional study related to mental health problems examined antisocial personality traits among the youth, and their relationship with criminal behaviors (Vaughn, Litschge, DeLisi, Beaver, & McMillen, 2008).

Several studies examined the impact of mentoring on youth psychosocial functioning (Munson & McMillen, 2008; Munson & McMillen, 2009; Munson, Smalling,

Spencer, Scott, & Tracy, 2010). These studies have shown that the majority of the youth reported having a mentor, whom they have known at least one year, and whom they contacted relatively frequently (Munson & McMillen, 2008). These studies also indicated that having a mentor at age 18 was associated with some benefits at age 19 (Munson & McMillen, 2009).

At least three studies have focused on various risky behaviors among youth in the VOYAGES sample. Such behaviors included criminal justice involvement, substance use, and relationship violence (Jonson-Reid, Scott, McMillen, & Edmond, 2007; Carter Narendorf & McMillen, 2010; Vaughn et al., 2008). Many of the surveyed youth reported elevated rates of risky behaviors. For instance, approximately 20% of the youth have been arrested between discharge and age 19; over 20% reported illegally making money; 6% assaulted someone; 5% sold drugs; and 4% carried a gun (Vaughn et al., 2008). In addition, about 20% reporting using marijuana at age 19%; and additional 6% reported using other illicit drugs (Carter Narendorf & McMillen, 2010). Predictors of substance use included early discharge from the foster care system, and living in some type of independent setting.

Finally, one study examined the relationship between youth religious involvement and a variety of risk behaviors (Scott et al., 2006). Results revealed that being female, African-American, having a history of sexual abuse, and placement in a non-kin foster home or congregate care, were associated with greater religious involvement. Moreover, religious service attendance was associated with decreased odds of engagement in sexual activity, as well as with decreased cigarette use.

In sum, although many aspects of youth functioning were previously explored using the VOYAGES dataset, none of the above reviewed studies specifically focused on youth resilience, or examined cumulative risk and protection in relation to youth functioning. The present study builds on previous research, and focuses its attention on the interplay between risk and protective factors, and its impact on resilient functioning.

Purpose of the Study

The first objective of the present study is descriptive in nature: to examine the prevalence of resilient functioning among youth emancipating from foster care. The majority of the studies on this population have taken a deficit-focused approach, highlighting instances of risk and maladaptation (Daining & DePanfilis, 2007). Only a handful of studies examined competent, or resilient, functioning among these youth, often focusing on one domain of competence only (e.g. educational success) (Hass & Graydon, 2009; Hines et al., 2005). In contrast, the present investigation examines multiple domains of competence simultaneously, including education and employment; avoidance of mental health problems and substance use; and absence of criminal involvement. Overall resilience is also examined, using a composite score combining the four domains. This extensive assessment of resilience answers an important question – how many foster youth manage to function successfully during the period of transition to adulthood?

The second objective of this study is to explore factors that contribute to the development of resilient functioning. Cumulative risk, as well as cumulative protection, have been examined in this regard. As previously noted, additive models of resilience suggest that protective factors contribute to competent functioning regardless of the level of risk. In contrast, interactive models suggest that the effect of protection may be

contingent upon the level of risk experienced by the youth (Fraser et al., 2004; Luther, 2006). This study aims to examine the validity of such models among youth emancipating from foster care.

In addition to these objectives, the present study compares two analytic models for examining the relationships between risk and protective factors and youth resilience. The first model examines each risk and protective factor individually, to assess its unique contribution to the development of resilience. The second model examines cumulative effects of risk and protective factors in relation to resilient functioning. No specific hypotheses have been made in relation to these analyses; rather, their goal was to increase confidence in the study findings, and shed light on the potential consequences of choosing one model over the other.

The present study possesses several advantages over existing investigations. First, it focuses on the phenomenon of resilience – a topic that has received little attention in studies of emancipating foster youth. Second, it examines resilience both *within* and *across* multiple domains of functioning, providing a more accurate assessment of success in the face of adversity. Third, it does not assume that youth are homogenous with regards to the risk and protective factors present in their environments. Fourth, it allows to evaluate additive versus interactive models of resilience, which has not been previously conducted with this population. Fifth, it compares the utility of two statistical models – individual variables model, and cumulative risk/protection model. Finally, it involves a prospective research design, increasing the ability to make causal inferences.

Research Questions and Specific Hypotheses

<u>Research Questions</u>

1. How many youth meet criteria for resilience in the following domains of functioning: being a "productive adult" (i.e. employed and/or at school); and avoidance of mental health problems; substance use; and criminal involvement? In addition, how many youth exhibit resilient functioning across multiple domains of functioning (i.e. two, three, and four domains)?

2. Does the cumulative risk experienced relate to resilient functioning in each domain, as well as overall?

3. Does the cumulative protection experienced relate to resilient functioning in each domain, as well as overall?

4. Does the level of risk experienced moderate the relationship between cumulative protection and resilience?

<u>Specific Hypotheses</u>

1. More youth will meet criteria for resilience in one domain, compared with those meeting criteria for resilience in multiple domains. Specifically, the percentage of youth resilient in a single domain will be the highest, whereas the percentage of youth resilient across all four domains will be the lowest.

2. Cumulative risk experienced will be negatively associated with resilience. Specifically, higher cumulative risk will be associated with *decreased* likelihood of resilience in each domain, as well as overall.

3. Cumulative protection experienced will be positively associated with resilience. Specifically, higher cumulative protection will be associated with *increased* likelihood of resilience in each domain, as well as overall.

4. Cumulative risk will moderate the relationship between cumulative protection and resilience. Specifically, higher cumulative protection will be associated with increased likelihood of resilience for youth with relatively low levels of risk, but not for those with relatively high levels of risk. Such effects will be present for each resilience domain, as well as overall resilience.

Chapter 4

Methodology

This chapter describes the Mental Health Service Use of Youth Leaving Foster Care (VOYAGES) 2001-2003 study, as well as the approach used in the present analysis. The chapter describes the study sample, the measures for the constructs of interest, and the analytic strategies used to examine the study hypotheses. Information about study design and procedures was obtained from the Mental Health Service Use of Youth Leaving Foster Care (VOYAGES) 2001-2003: User's Guide and Codebook.

Dataset

This study is a secondary analysis of data from a longitudinal cohort study of older youth in the custody of the Missouri Children's Division (MCD). The primary purpose of the VOYAGES study was to explore changes in mental health service use as youth leave the foster care system and transition to independence. The data collected examined multiple parameters of youth functioning, including personality characteristics, problem behaviors, educational and vocational attainment, and other indicators.

From December 2001 to May 2003, the MCD provided the research team with names of youth who were in its custody and who would be turning 17 in the following month. The names and contact information of youths` caseworkers were also provided. The youth in the data set came from eight counties, six of which were in and around St. Louis, and two of which were in Southwest Missouri. The latter two counties were added to make the sample more ethnically representative of the population of youth in the state's foster care system.

Caseworkers were contacted and asked to provide informed consent. Youth were excluded from the study if they met any of the following criteria: (1) possessed a documented full-scale IQ score below 70, (2) were no longer in MCD custody (3) did not speak English, (4) were placed more than 100 miles beyond the borders of any of the eight counties, or (5) were on continual run-away status 45 days past their 17 birthday.

Of the 647 youth referred to the project, 196 were excluded: 81 because of custody changes prior to obtaining informed consent and assent; 31 because of documented full-scale IQ score below 70; 5 because of a chronic medical condition that made it impossible for them to communicate; 31 because they were living out of the study area (11 placed out of state with relatives, 10 placed at a secure facility out of the area that would not allow a confidential interview, and 10 placed in state but out of the study area) and 49 because they were on run-away status at age 17 and had not returned by age 17 years and 45 days.

Of the remaining 451 youth deemed eligible to participate, 406 (90%) were interviewed. Among the eligible youth, 39 (8%) chose not to participate. The researchers were unable to obtain consent from a case manager of additional 4 youth (1%), and were unable to complete one interview for which consent and assent had been obtained. The resulting analysis sample of 406 youth contained: 228 females (57%) and 178 males (43%); 178 whites (43%) and 228 non-whites (56%). The 228 nonwhites included 206 African Americans, 14 youth of mixed race, 3 American Indians, 4 Latinos, and 2 youth of other races.

Youth were interviewed every three months from age 17 to age 19. Although a total of 9 interviews were conducted, not all measures were collected at each time point.

The baseline interview was conducted in person close to each youth's 17th birthday. The final interview, also in-person, was conducted when youth were approximately 19. Interviews 2 through 8 were conducted over the phone every three months. Youth were interviewed by trained professional interviewers using a structured protocol in conjunction with a history calendar to improve recall accuracy. Each youth was paid $40 for the baseline interview, $40 for the final interview, and $20 for interviews 2 through 8. The Washington University Human Subjects Committee approved all procedures in advance. If custody changed during the course of the study, new informed consent procedures were implemented to gather the consent of the new legal guardian.

As mentioned above, most youth were interviewed for the first time near their seventeenth birthday (range: 16 years and 9 months to 17 years and 5 months). While the study aimed to retain 85% of the youth admitted, the proportion retained was 80%. A total of 406 youth participated at the baseline interview, with 325 also participating at the final interview (80% of the eligible youth). One participant died before age 19. Two others became ineligible due to disability. Fully 63 participants (16%) could not be located, and seven (2%) chose to leave the study. Another seven (2%) were incarcerated at the time of the final interview and the research team was unable to gather required protections or permissions from relevant authorities. Finally, two were not interviewed because of their overseas military service. Multivariate logistic regression used to predict retention indicated that the following characteristics were associated with decreased odds of being retained for the final interview: male gender (OR=.34, p<.001), past year posttraumatic stress disorder at initial interview (OR=.36, p=.025), history of juvenile

detention by the first interview (OR=.26, p=.016), and being released from the state's custody prior to age 19 (OR=.26, p<.0001).

Additional information about the design and procedures of the VOYAGES study can be found in the user's guide, as well as in previously published articles (e.g. McMillen at a., 2005; Munson & McMillen, 2009; Scott et al., 2006; Vaughn et al., 2008).

Sample

The present study focused on those youth who completed both the baseline and the final interview (N=325). Youth not retained for the final interview were excluded, as they lacked information on key indicators of resilient functioning. In addition, listwise deletion was implemented when youth had missing information on any of the risk and protective factors examined in the present study. As a result, additional 61 cases were excluded, and a final sample of 264 youth was obtained (81% of those who completed the final interview; 65% of the baseline sample). To examine possible bias resulting from listwise deletion, the final sample (n=264) and the excluded cases (n=61) were compared on demographic indicators (i.e. race; gender; foster care status); cumulative risk and protection scores; and the outcomes of interest (i.e. indicators of resilient functioning). The two groups were not significantly different on any of the above mentioned variables. The final sample for this study consisted of 163 females (61.7%) and 101 males (38.3%); 110 Whites (41.7%) and 154 non-Whites (58.3%). The non-Whites included 144 African-Americans; 2 American-Indians; 1 Pacific Islander; and 7 multiracial youth.

Measures

The present study utilized data from three waves of data collection: baseline interview, wave 2, and final interview. Measures of resilience were obtained from the final interview (i.e. when youth were approximately 19 years old). Measures of risk and protection, as well as youth demographic indicators, were obtained from baseline and wave 2 interviews (i.e. when youth were approximately 17). Data from wave 2 were utilized only when the necessary measures were not administered at baseline. A detailed description of the measurement strategies for the constructs of interest is presented below.

Demographic Indicators and Controls

Information about youth gender and race were obtained from the baseline interview. Gender was a dichotomous variable coded: (0) female; (1) male. Race was also a dichotomous variable coded: (0) White; (1) non-White. As previously noted, non-White youth included 144 African-Americans; 2 Native-Americans; 1 Pacific Islander; and 7 multiracial youth.

The state of Missouri allows youth to remain in foster care, on a voluntary basis, until their 21st birthday (NRCYD, 2012). At the time of the final interview (age 19), youth were asked to report whether or not they were still in foster care. A dichotomous variable was created based on their responses, and coded: (0) still in foster care; and (1) left foster care.

Risk Factors

Nine hypothesized risk factors were examined in the present study. These indicators were chosen a priori based on evidence from previous investigations

suggesting that they are associated with youth adjustment difficulties (i.e. decreased likelihood of resilience). The measurement strategies for each risk factor are presented below.

Childhood maltreatment: Physical abuse and physical neglect histories were assessed at baseline using the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). Youth indicated the extent to which they had been victims of physical abuse (e.g., "I was punished with a belt, a board, a cord, or some other hard object") and physical neglect (e.g., "I didn't have enough to eat) on a 5-point, Likert scale ranging from *never true* (1) to *very often true* (5). The CTQ has demonstrated adequate reliability in a community sample (Scher, Stein, Asmundson, McCreary, & Forde, 2001) and in a previous study of older youth in foster care (Auslander et al., 2002). In the VOYAGES study, alpha coefficients were .88 for physical abuse and .79 for physical neglect.

To assess sexual abuse history, three items adapted from Russell (1986) and used in a prior study of older foster youth (Auslander et al., 2002) were included. Youth were asked to report (a) if they were ever made to touch someone's private parts against their wishes, (b) if anyone had ever touched their private parts against their wishes, and (c) if anyone ever had vaginal, oral, or anal sex with them against their wishes. Youth were dichotomized into two sexual abuse history groups: youth responding "yes" to any of the three questions were identified as having a history of sexual abuse (1); youth responding "no" to all three questions were identified as having no history of sexual abuse (0).

Missing data on any of the child maltreatment items were "hot-decked" by the VOYAGES research team. Hot-Deck imputation is a means of imputing missing information from other observations in the sample. Data were explored for the most

robust correlates of the item with missing values, sorted by these correlates and a random value, and then imputed from the score above it.

History of mental illness in the family: To assess history of mental illness in the family, two baseline questions were used: (a) "Has anyone in your family received treatment for any emotional problems such as depression or anxiety"; and (b) "Has anyone in your family ever attempted or committed suicide". Youth responding "yes" to any of the questions were identified as having a history of mental illness in the family (1); youth responding "no" to the two questions were identified as having no history of mental illness in the family (0).

History of substance use in the family: Similarly, history of substance abuse was assessed with two baseline questions: (a) "Has anyone in your family ever used drugs or become intoxicated frequently"; and (b) "Has anyone in your family received treatment for drugs or alcohol". Youth responding "yes" to any of the questions were identified as having a history of substance abuse in the family (1); youth responding "no" to the two questions were identified as having no history of substance abuse in the family (0).

History of criminal involvement in the family: This construct was assessed with the following baseline question: "Has anyone in your family committed, been charged with, or convicted of illegal acts". Responses were coded: (1) presence of legal involvement in the family, and (0) absence of legal involvement in the family.

Age of entry to foster care: Youth age of entry to foster care was assessed with the following baseline question: "How old were you when you entered DFS custody the first time"? Age of entry to DFS custody was a continuous variable recorded in years, with younger age of entry considered to pose greater risk to the youth.

Number of placements to DFS custody: The number of times youth were placed in DFS custody was assessed with the following baseline question: "How many different times have you been placed in DFS custody". A continuous variable representing the number of entries was used, with higher number of entries considered to pose greater risk to the youth.

School transitions: The number of times youth changed schools was assessed with the following baseline question: "Starting with 7th grade, how many times did you change schools in the middle of the school year". A continuous variable representing the number of times youth changed schools was used in the study, with higher number of school transitions considered to pose greater risk to the youth.

Protective Factors

Nine hypothesized protective factors were included in the present analysis. Similarly to the risk factors, protective factors were chosen a priori based on evidence from previous investigations suggesting they are associated with competent functioning (i.e. increased likelihood of resilience). The measurement strategies for each protective variable are described below.

Reading level: In the present study, reading level was used as a proxy for overall cognitive ability. Reading level was assessed at baseline, using the Wide Range Achievement Test 3 (WRAT3; Wilkinson, 1993, Snelbaker, Wilkinson, Robertson, & Glutting, 2001). The WRAT3 reading section measures participants' recognition and decoding of words. Participants were shown a reading card listing 42 words and asked to pronounce each word. Testing was discontinued if a participant made 10 consecutive pronunciation errors. Participants unable to pronounce or decode at least 5 words

completed the Letter Reading test where they were asked to identify a series of letters listed horizontally on a reading card. The coefficient alpha for the WRAT3 Blue Reading test is .92 for individuals 17 to 19 years of age (Wilkinson, 1993). In addition, the stability of the WRAT3 Blue Reading test has been demonstrated with a test-retest uncorrected correlation of .93 (Wilkinson, 1993). Finally, the validity of WRAT3 test scores has been demonstrated through moderate to high correlations with other standardized academic achievement tests. Importantly, a correlation has been demonstrated between WRAT3 scores and measures of general cognitive ability (Snelbaker et al., 2001).

Perceived benefit from negative events: Positive by-products were measured by the Perceived Benefits Scale (PBS; McMillen & Fisher, 1998) administered at baseline. The PBS is a 30-item scale that assesses commonly reported positive by-products of adversity across eight factors: enhanced self-efficacy, increased faith in people, increased compassion, increased spirituality, increased community closeness, enhanced family closeness, lifestyle changes, and material gain. In the VOYAGES study, 4 items from the enhanced self-efficacy subscale (e.g., "My difficult experiences taught me I can handle anything") and 4 items from the increased capacity subscale (e.g., "As a result of my difficult experiences, I am more sensitive to the needs of others") were administered to examine how youth might have been changed by the difficult things they have experienced. Participants responded to items on a 5-point, Likert scale ranging from *not at all* (0) to *very much like* (4), with higher scores indicating more perceived positive by-products from adverse experiences. In the sample used in the present study (n=264), the Chronbach alpha was .75, indicating adequate reliability. Convergent validity of the PBS

subscales was previously demonstrated by their high correlations with subscales from an inventory of post-traumatic growth.

Benevolence of the world: Participants` assumptions about the benevolence of the world were assessed by the World Assumptions Scale (WAS, Janoff-Bulman, 1989) administered at baseline. Participants responded to 8 items from the benevolence of the world (BW) and the benevolence of people (BP) subscales (e.g., "People are naturally unfriendly and unkind."). A 4-point scale was used, ranging from *strongly disagree* (1) to *strongly agree* (4). Responses were summed to create an overall score, with higher summative scores indicating more positive perceptions about the benevolence of the world. The 8 items used to create the benevolent world score have been found to comprise a single factor (Janoff-Bulman, 1989). Reliability estimates for WAS subscales reportedly range from .66 to .76 (Janoff-Bulman, 1989). In the present sample (n=264), the Chronbach alpha was .71, indicating adequate reliability.

Religiosity: Two dimensions of religiosity were assessed in the present study. Five items from the Brief Multidimensional Measure of Religiousness/Spirituality (Fetzer Institute, 1999) were used to assess *religious practices* (e.g., "How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?" and "How often do you read the Bible or other religious literature?"). Response options ranged from never (1) to more than once a day (6), with higher scores indicating greater religious practices. The coefficient alpha for the present sample (n=264) was .61, indicating moderate reliability.

The 7-item Spiritual Isolation subscale of the Personal Experience Inventory (PEI; Winters & Henly, 1989) was used to assess youth *religious beliefs*. The PEI is a multi-

scale questionnaire that assesses youth drug use and psychosocial risk factors, one being Spiritual Isolation. Consistent with other measures of religious beliefs (e.g., D'Onofrio et al., 1999; Fetzer, 1999), items pertained to the transcendent (e.g., "I believe there is a spiritual force that can help me with my problems") as well as cognitive aspects of beliefs (e.g., "I rely on religion when I have problems"). Response options for each item ranged from strongly disagree (1) to strongly agree (4), with higher scores indicating greater agreement with statements relating to religious beliefs. The coefficient alpha for this subscale in the present sample (n=264) was .86, indicating good reliability.

Helpfulness of biological family members: In this study, perceived helpfulness of biological family members was used as proxy for the quality of relationships with the family of origin. Perceived helpfulness was assessed with the following baseline item: "Young people in foster care have a variety of adults who have tried to help them. Of all the people who have helped you, who has helped the most?" Participants who named a member of their biological family as being the most helpful (i.e. bio parent, bio sibling, bio grandparent, bio aunt/uncle) received a score of (1), indicating the presence of protection. All other youth received a score of (0), indicating the absence of protection.

Presence of a supportive adult: Presence of a supportive adult was assessed with the following item administered at wave 2: "Is there at least one adult in the community that you could go to for emotional support". Youth responding "yes" to this question received a score of (1), indicating presence of protection. Youth responding "no" received a score of (0).

Involvement in extracurricular activities: During the baseline interview, youth were asked about their involvement in eight extracurricular activities at school: (a) band,

orchestra or other music group; (b) drama club, school play or musical; (c) student government; (d) school sports; (e) academic clubs; (f) hobby clubs; (g) pep squad, cheerleading, or color guard; and (h) other activity at school. Response options for each activity were yes/no. A continuous variable representing the total number of activities was created, ranging from 0 to 8.

Liking school: Youth attachment to school was assessed with the following baseline item: "Do you like school". Response options were: not at all, somewhat, a little, and, a lot. For the purpose of the present study, a dichotomous variable was constructed based on youth responses. Youth stating that they like school *a lot* received a score of (1), indicating the presence of protection. All other youth received a score of (0).

Constructing Cumulative Risk and Protection Indices

To examine the accumulation of risk and protection in youth ecologies, cumulative indices were constructed. Studies have shown that the accumulation of risks experienced predict development outcomes better than any singular risk (e.g. Appleyard et al., 2005; Raviv et al., 2010), and that the same notion may apply to the concept of protection (Fraser et al., 2004). In the present study, cumulative risk and protection indices were created to evaluate their impact on resilience among youth emancipating from foster care.

In keeping with the literature on this topic, the following steps were used to create cumulative risk and protection indices. First, each risk and protective variable was dichotomously coded as (0) absent; or (1) present. Then, summative scores were created by adding the individual indicators, with higher scores representing higher cumulative risk or protection. Such a strategy was used in previous studies examining the effects of

cumulative risk and protection on individual development (Appleyard et al., 2005; Lima, Caughy, Nettles, & O'Campo, 2010; Raviv et al., 2010; Sameroff et al., 1987).

Although many studies support the predictive utility of cumulative indices, constructing such indices may pose methodological problems, especially when variables of interest are measured continuously. To include continuous variables in cumulative indices, meaningful dichotomization must occur first, denoting the presence or absence of the said effect (i.e. risk or protective). However, dichotomization of continuous variables may cause loss of information, biasing the study results (Burchinal, Roberts, Hooper, & Zeisel, 2000). Therefore, the assignment of dichotomous scores must be conducted with caution, and follow meaningful theoretical guidelines (Raviv et al., 2010). In the present study, commonly accepted cut-off scores were utilized when possible, along with empirical guidelines used in previous investigations.

In the present analysis, both dichotomous and continuous variables were included in cumulative indices. All dichotomous variables were coded such that (0) indicated the absence of the said effect; and (1) denoted its presence. For continuous variables, selection of cut-off points for dichotomization was based on the following considerations. When possible, theoretical guidelines, such as clinical cut-off scores, were used to assign dichotomous values. In cases where theoretical guidelines were not available, sample distributions were used to assign dichotomous scores. Previous studies reported a number of strategies for utilizing sample distributions, chief of which was using the upper/lower quartile of the distribution to denote the presence of the risk or protective effect (e.g. Price & Hyde, 2009; Appleyard et al., 2005; Raviv et al., 2010). However, this strategy is

sensitive to the assumption of normality; other cut-off points may be better suited for non-normally distributed variables.

Cumulative risk index: Nine risk factors were included in the cumulative risk index; five of which were continuous, and four were dichotomous. Each dichotomous variable (i.e. history of mental health problems, substance abuse, and criminal involvement in the family; as well as youth history of sexual abuse) was coded: (0) absent; and (1) present.

Physical abuse and physical neglect scores were dichotomized based on a commonly accepted cut-off score of 10 or higher, indicating the presence of moderate or severe maltreatment (Bernstein & Fink, 1998). Based on this cut-off score, youth were dichotomized into two groups for each maltreatment type: (1) presence of moderate or severe abuse/neglect; and (0) absence of moderate or severe abuse/neglect.

Age of entry to foster care was dichotomized based on standards for early entry used in previous investigations (e.g. Scott et al., 2006). Youth entering care before the age of 10 were considered to be at risk, receiving a score of (1). All other youth received a score of (0).

The number of times youth were placed in DFS custody was dichotomized based on the sample distribution. Because most youth in the present sample were placed in state's custody only one time, a score of (1) was assigned to those placed twice or more, denoting the presence of risk. A score of (0) was assigned to those placed in state's custody one time only.

Lastly, the number of times youth changes schools since the 7th grade was dichotomized based on the sample distribution. This was a non-normally distributed

variable; therefore, the median was used as a cut-off point for assigning dichotomous scores. Youth scoring above the median received a score of (1), denoting the presence of risk. Youth scoring at or below the median received a score of (0).

Cumulative risk index was created by summing the dichotomous scores on the above mentioned risk factors. Scores ranged from 0 to 9, with higher scores indicating higher levels of risk. As previously noted, this approach was consistent with the extent of literature in this area (e.g. Appleyard et al., 2005; Raviv et al., 2010; Sameroff et al., 1987).

Cumulative protection index: Nine protective factors were included in the cumulative index of protection; six of which were continuous, and three were dichotomous. Each dichotomous variable (i.e. liking school; presence of a supportive adult; and perceived helpfulness of biological family) was coded: (1) present; and (0) absent. Dichotomization strategies for continuous variables are described below.

Youth reading scores were dichotomized based on grade level norms recommended by the WRAT3 test developers. Youth with reading levels of high school or above received a score of (1), indicating the presence of protection. Youth with reading scores below high school level received a score of (0), indicating the absence of protection.

Scores on the Perceived Benefit scale were dichotomized based on the sample distribution. Because this variable was non-normally distributed, the median was used as a cut-off point for assigning dichotomous scores. Youth scoring above the median received a score of (1), indicating the presence of protection (i.e. higher perceived positive by products from negative experiences). Youth scoring at or below the median

received a score of (0). This strategy was also used for the Benevolence of the World scale, and for Religious Practices and Religious Beliefs scales. The scores on each of these variables were non-normally distributed, supporting the use of the median.

Lastly, the number of extracurricular activities was dichotomized based on the sample distribution. Because most youth reported being involved in one extracurricular activity or no activities at all, youth involved in two activities or more received a score of (1), denoting the presence of protection. All other youth received a score of (0).

Cumulative index of protection was created by summing the dichotomous scores on the nine protective factors. Scores ranged from 0 to 9, with higher scores indicating higher levels of protection in youth environments.

Comparison strategies for dichotomizing continuous variables: Due to potential biases resulting from the dichotomization of continuous variables, two comparison strategies were used when assigning dichotomous scores. First, the median split approach was compared to the upper quartile spit approach commonly used in the cumulative risk literature. A second comparison approach involved dichotomizing continuous variables based on upper 15% of the sample distribution for each variable. Variables with commonly accepted cut-off scores (i.e. child maltreatment, reading level) remained unchanged in these analyses. The impact of utilizing different cut-off scores will be described in detail in the results section.

Measurement of Resilient Functioning

Four indicators of resilient functioning were used as dependent variables in the present study: (1) resilience to mental health problems; (2) resilience to substance use; (3) resilience to criminal involvement; and (4) overall resilience. All indicators of resilience

were obtained from the final interview. The first three indicators (i.e. mental health, substance use, and criminal involvement) were dichotomously coded as "resilient" or "non-resilient". Overall resilience scores were computed by combining the above mentioned indicators, as well as an additional variable: being a "productive adult" (i.e. either employed or in school). The indicators of resilient functioning included in the present analysis corresponded with previous research in this area (e.g. Daining & DePanfilis, 2007).

Resilience to mental health problems: Resilience to mental health problems was indicated by the absence of the following psychiatric disorders in the past 12 months: major depressive disorder, manic episode, general anxiety disorder, posttraumatic stress disorder, and antisocial personality disorder. Psychiatric disorders were assessed using the Diagnostic Interview Schedule-Version IV (DIS-IV). The DIS-IV is a structured diagnostic interview designed to assess the recency, onset, and duration of various DSM-IV diagnoses. Several studies on the reliability and validity of the DIS have been conducted (Rogers, 1995). Overall, the DIS demonstrated adequate diagnostic reliability. Comparing independent administrations by psychiatrists and lay interviewers, Robins and colleagues (1981) have found that the DIS demonstrated moderate test-retest reliability for lifetime diagnoses (K = .67). Among trained lay interviewers, Vandiver and Sher (1991) found the DIS to be a moderately reliable instrument for assessing lifetime diagnoses (K = .43; Y = .63) and current diagnoses (K = .46; Y = .69). Adequate predictive validity of the DIS has been demonstrated in the general population (Helzer, Spitznagel, & McEvoy, 1987). The validity of the DIS has been demonstrated with mean kappa values ranging from .62 to .70 for all diagnoses (Robins et al., 1981).

The research team of the VOYAGES study created dichotomous variables for each of the five previously listed disorders. Each variable was coded yes/no, referencing the presence or absence of the disorder in the past 12 months. To meet the criteria for resilience, "no" must be indicated for <u>each</u> of the five disorders. Resilience to mental health problems was dichotomously coded: (1) resilient; and (0) non-resilient.

Resilience to substance use: Drug use was assessed with portions of the Diagnostic Interview Schedule for DSM-IV (Robins et al., 1995). Respondents indicated whether they had used each of the following substances in the past 12 months: marijuana, amphetamines, sedatives, opiates, cocaine, hallucinogens, inhalants, nitrous oxide or amyl nitrate, and club drugs. The last two categories were added in the original study and were not part of the DIS for DSM IV. For each substance, response options were yes/no. To meet the criteria for resilience, "no" must be indicated for <u>each</u> of the above mentioned substances. Resilience to substance use was dichotomously coded: (1) resilient; and (0) non-resilient.

Resilience to criminal involvement: To assess legal involvement, the following questions were used: (a) "In the past 12 months, have you been charged with an offence by the police"; (b) "In the past 12 months, have you sold or helped to sell marijuana, hashish, or any other drugs such as meth, heroin, cocaine, or LSD"; (c) "In the past 12 months have you attacked someone with the idea of seriously hurting them or have you had a situation that ended up in a serious fight or assault of some kind"; and (d) "Have you carried a gun in the past 12 months". To meet the criteria for resilience, "no" must be indicated for <u>each</u> of the above listed questions. Resilience to criminal involvement was dichotomously coded: (1) resilient; and (0) non-resilient.

Productive adult: Youth was considered a "productive adult" if he or she was either in school (high school; technical/trade school; or college) or employed at the time of the final interview. This variable was constructed by the research team of the VOYAGES study, and coded: (1) productive adult, (0) not a productive adult.

Composite resilience score: A composite resilience score was computed by summing the four individual indicators of resilience (i.e. productive adult, and resilience to mental health problems, substance use, and criminal involvement). Resilience scores ranged from 0 to 4, with higher scores indicating higher overall resilience. However, because the composite score had 5 possible values only, and was non-normally distributed, it was recoded such that youth receiving scores of 0, 1, or 2 were considered non-resilient (0); while youth receiving scores of 3 or 4 were considered resilient (1). More details on this decision are provided in the next section.

Analytic Strategy

The analyses for the present study were conducted in a number of steps. A detailed description of each step is presented below.

Univariate Analyses

At the first step, variables` distributions were examined to determine their statistical properties. As previously noted, all continuous variables were dichotomized to create cumulative risk and protection indices (using median split as the primary approach, and upper quartile split, as well as upper 15% split, as comparison approaches). A correlation matrix was computed to assess the magnitude of the relationships between predictors, both before and after the dichotomization of continuous variables.

Independent samples t-tests were used to examine the relationships between youth demographic indicators (i.e. gender, race, and foster care status) and their scores on cumulative risk and protection indices. The goal of these analyses was to assess potential differences between the groups in overall levels of risk and protection. Analyses were repeated three times (with cumulative indices based on median split, upper quartile split, and upper 15% split).

Next, the number of youth who met criteria for resilience in each domain of functioning, as well as the number of youth resilient across multiple domains, was calculated. These analyses enabled to examine the first hypothesis of the study - that the proportion of resilient youth would decrease as the number of resilience domains increases.

Bivariate relationships between each risk and protective factor and indicators of resilient functioning were examined at the next step. Pearson's product moment, point-biserial, and phi coefficients were used in these analyses. The goal of the analyses was to examine whether each risk and protective variable exerted the hypothesized effect on the outcomes of interest. Bivariate relationships between youth cumulative risk and protection scores and indicators of resilient functioning were also examined. Separate analyses were conducted for cumulative indices based on median split, upper quartile split, and upper 15% split.

Multivariate Analyses: Individual Indicators

Prior to examining the cumulative impact of risk and protection on youth resilience, individual contributions of each risk and protective factor were examined. This analytic step served two primary goals. First, it allowed an assessment of potential biases

resulting from the dichotomization of continuous variables. Second, it allowed an evaluation of the unique impact of each risk and protective variable on the study outcomes.

Resilience to mental health problems, substance use, and criminal involvement were used as separate dependent variables, in addition to being included in a composite resilience score. The decision to use a dual approach was made because the impact of risk and protection may vary depending on the competence domain examined. The presence of potential differences can be easily overlooked if only the composite score is used as a dependent variable. It should be noted, however, that "productive adult" was not used as a separate dependent variable, primarily because this indicator can be relatively unstable (i.e. youth employment and school situations change frequently), and may be influenced by a variety of unmeasured factors.

Binary logistic regression was used to assess the impact of risk and protective factors on youth resilient functioning. Resilience to mental health problems, substance use, and criminal involvement served as dependent variables in three regression equations. In each equation, independent variables were entered in three blocks: (1) demographic indicators (i.e. gender, race, and foster care status); (2) risk factors; and (3) protective factors. This strategy allowed an evaluation of the contributions of each block, controlling for the previously entered blocks.

Initially, linear regression was intended to be used with overall resilience scores. Upon further examination, the use of linear regression was not appropriate, because the composite score had 5 possible values only (0 to 4), and was non-normally distributed. Multinominal logistic regression could not be used, as it requires relatively large sample

size across *all levels* of independent and dependent variables (Petrucci, 2009). Thus, binary logistic regression was, again, the strategy of choice. As previously noted, overall resilience scores were recoded such that youth resilient in zero, one, or two domains received a score of (0); whereas youth resilient in three or four domains received a score of (1). As described above, independent variables were entered in three separate blocks: demographic characteristics, risk factors, and protective factors.

Multivariate Analyses: Cumulative Indices

These analyses allowed an examination of the second, third, and fourth hypotheses of the present study. Binary logistic regression was used to examine the relationships between cumulative risk and protection, and indicators of resilient functioning. Dependent variables were identical to those described above (i.e. resilience to mental health problems, substance use, and criminal involvement, as well as overall resilience). In each regression equation, independent variables were entered in four blocks: (1) demographic characteristics; (2) cumulative risk scores; (3) cumulative protection scores; and (4) interaction term between risk and protection. The interaction term allowed an examination of whether cumulative risk moderated the relationship between cumulative protection and resilience. Risk and protection scores were centered prior to computing the interaction term. Analyses were repeated with three strategies discussed earlier: median split, upper quartile split, and upper 15% split.

Chapter 5

Results

This chapter presents a description of the study results. The characteristics of the sample will be presented first, followed by univariate analyses aimed at evaluating the first hypothesis of this study. Multivariate analyses with individual risk and protective factors will be presented next. Subsequently, multivariate analyses with cumulative risk and protection indices will be presented, allowing an evaluation of the second, third, and fourth hypotheses of the study. At the final step, comparison strategies for creating cumulative risk and protection indices will be described, and summary results will be presented.

Sample Description

Table 1 describes the characteristics of the sample used in the present study (n=264). Analyses revealed that 61.7% of the youth were female, and 38.3% were male; 41.7% were White; and 58.3% were non-White. As previously noted, over 90% of the non-whites were African-American. At the time of the final interview (i.e. when youth were approximately 19 years old), 48.5% were still in foster care, while 51.5% had left the foster care system.

Risk and Protective Factors

The present study examined nine risk factors, and nine protective factors in relation to resilient functioning. Table 2 presents the bivariate correlations between risk and protective factors (with continuous variables used in their original form). For the most part, the magnitude of the relationships was in the low to moderate range (0 to .33).

However, higher correlations were detected between physical abuse and physical neglect (.53; p<.001), and between measures of religious practices and religious beliefs (.58; p<.001). The magnitude of these relationships was lower than the commonly accepted multicollinearity threshold of .80 (Munro, 2005).

At the next step, continuous variables were dichotomized to create cumulative risk and protection indices. Prior to the dichotomization, scores` distributions were examined, and summary statistics were computed for each variable. As demonstrated in Table 3, the mean age of entry to foster care among the youth was 10.87. On average, youth were placed in the state's custody 1.32 times, and had 2.06 school transitions in the middle of the year since the 7th grade. As expected, youth scores on measures of physical abuse and physical neglect were relatively high, approaching or exceeding the cut-off score of 10 indicating moderate or severe maltreatment. In contrast, youth average readings scores were relatively low (M=38.70), corresponding with 7th grade reading level only. Furthermore, these youth were involved in an average of 1.13 extracurricular activities at school.

Table 3 presents summary statistics for each continuous risk and protective factor, to evaluate the assumption of normality. Skewness and kurtosis values pointed to non-normal distributions for the majority of the continuous variables. Because binary logistic regression does not require independent variables to be normally distributed (Munro, 2005), transformations have not been performed.

To construct cumulative indices, continuous variables were dichotomized to denote the presence or absence of the risk or protective effect. As indicated in the previous section, youth were considered at risk if they had the entered state's custody

before the age of 10, were placed in custody more than one time, and had two or more school transitions in the middle of the year since the 7th grade. Physical abuse and physical neglect scores were dichotomized based on cut-off scores of 10 or higher, denoting the presence of moderate or severe maltreatment. For reading scores, grade levels recommended by the WRAT3 test developers were used, with scores of 47 or higher (i.e. high-school reading level or above) denoting the presence of protection. Lastly, youth involved in two or more extracurricular activities were considered to possess protection.

Sample distributions were utilized to dichotomize scores on the Benevolence of the World scale, Perceived Benefit scale, as well as Religious Practices and Religious Beliefs scales. Because each of these variables was non-normally distributed, median scores were used as the primary strategy for dichotomization. Subsequently, comparison analyses were performed using upper quartile split, as well as upper 15% split. The results of comparison analyses will be presented at the last section of this chapter.

Table 4 presents the prevalence of dichotomous risk and protective factors among the youth. For many risk factors, the frequency of exposure was relatively high. For instance, moderate to severe physical abuse and physical neglect were present in 43.6% and 45.5% of the sample respectively. Furthermore, 35.2% of youth reported a history of sexual abuse. When family risk factors were considered, 66.3% reported a history of criminal involvement, 54.9% reported a history of mental illness, and as many as 82.2% reported a history of drug abuse. Early age of entry to foster care was reported by 32.6% of the youth, and 23.9% were placed in state's custody more than one time. Finally,

47.7% reported two or more school transitions in the middle of the school year since the 7th grade.

The frequency of exposure to protective factors was somewhat lower in comparison to the risk factors. For instance, only 11% possessed high school reading levels or above; 31.8% liked school "very much"; and 30.7% participated in two or more extracurricular activities at school. Only 31.1% named a biological family member as being the most helpful; however, as many as 84.5% reported having a supportive adult in the community. When youth personal characteristics were considered, 48.9% had high scores (i.e. above the median) on the Benevolence of the World scale; 45.5% had high scores on the Perceived Benefit from Negative Events scale; 47% reported high involvement in religious practices; and 48.9% had high levels of religious beliefs.

Cumulative Risk and Protection Indices

Following the dichotomization of continuous variables, cumulative indices were constructed to assess the levels of risk and protection in youth ecologies. Risk index was computed by summing the nine dichotomous risk factors presented in Table 4. Scores ranged from 0 to 9; with a mean of 4.31. Protection index was computed by summing the nine dichotomous protective factors also listed in Table 4. Scores ranged from 0 to 8, with a mean of 3.79. A positive correlation was found between the risk and protection indices, indicating that youth possessing higher levels of risk, also possessed higher levels of protection (r=.12; p<.05).

Independent samples t-tests were performed next, to examine whether youth levels of risk and protection varied based on their demographic indicators (i.e. gender,

race, and foster care status). Prior to each analysis, Levene's test for equality of variances was performed; for significant results, t-test results for unequal variances were used.

Table 5 presents the differences in cumulative risk and protection scores based on youth demographic indicators. Females had higher risk scores compared with males (M=4.54 and 3.95 respectively, t=2.40; p<.05); but their protection scores did not differ significantly. Whites had both higher risk scores, and lower protection scores compared with non-Whites (t=2.34 and -2.77 respectively; p<.05). Interestingly, youth who left foster care prior to age 19 possessed similar levels of risk and protection as did those who remained in care at the time of the final interview (i.e. age 19).

Resilience Indicators

Table 6 presents the frequencies of resilient functioning in each of the four domains studied, as well as overall resilience scores combining the four domains. In general, youth in this sample had relatively high levels of resilience. To illustrate, 80.7% were resilient to mental health problems, 69.7% were resilient to substance use, and 77.7% were resilient to criminal involvement. Furthermore, 67% were either employed or in school (i.e. "productive adults"). Noteworthy, the different indicators of resilience were moderately positively correlated with each other. The highest observed correlation emerged between resilience to substance use and to criminal involvement (.31; p<.001); the lowest observed correlation emerged between resilience to criminal involvement and being a "productive adult" (.08; p=.15).

When overall resilience was examined, only seven youth (2.7%) did not meet the criteria for resilience in any of the above mentioned domains. In contrast, fully 104 youth (39.4%) were resilient across all domains. Additional 31.4% were resilient in three

domains, indicating that over 70% of youth were resilient in either three or four domains. These results show that the first hypothesis, suggesting that the proportion of resilient youth would decrease as the number of resilience domains increases, was not fully supported. Although the proportion of youth resilient in all four domains (39.4%) was lower than the proportion of youth resilient in each individual domain (67% to 80.7%), a steady decrease in resilience rates was not observed. For instance, the proportion of youth resilient in two domains (16.7%) was lower than the proportion of youth resilient in three (31.4%) or four (39.4%) domains.

Risk and Protective Factors, and Indicators of Resilience: Bivariate Relationships

At the next step, bivariate relationships between risk and protective factors and indicators of resilience were examined. Examining these relationships was necessary to determine whether each predictor variable exerted the hypothesized effect (i.e. risk or protective) on the study outcomes. Pearson's product moment, point-biseral, and phi coefficients were used to evaluate these relationship. Table 7 presents correlations with continuous risk and protective variables used in their original form. Table 8 presents correlations using dichotomized risk and protective variables. Comparisons reveal that the patterns of the relationships remained largely unchanged; however, the strength of the relationships was sometimes altered following the dichotomization.

For resilience to mental health problems, significant correlations in the predicted direction were detected for four risk factors (number of school transitions; physical abuse; sexual abuse; family history of mental illness); and two protective factors (perceived benefit from negative events; helpfulness of biological family members). For resilience to substance use, significant correlations in the predicted direction were

detected for one risk factor (family history of criminal involvement); and three protective factors (religious practices; religious beliefs; extracurricular activities). In addition, a significant correlation in the opposite direction was detected for reading levels, suggesting that youth with higher reading levels were *less* likely to be resilient to substance use. Interestingly, no risk factors, and only one protective factor (perceived benefit from negative events) significantly correlated with resilience to criminal involvement. Furthermore, only one risk factor (school transitions); and two protective factors (perceived benefit from negative events; involvement in extracurricular activities) significantly correlated with youth overall resilience.

Bivariate relationships between cumulative risk and protection scores and indicators of resilience were, likewise, evaluated. Scores on the cumulative risk index were significantly negatively correlated with resilience to mental health problems (-.27; p<.001), as well as with overall resilience (-.14; p<.05). In contrast, scores on the cumulative protection index were significantly positively correlated with resilience to substance use (.15; p<.05), and overall resilience (.16; p<.01). Neither risk scores nor protection scores were significantly correlated with resilience to criminal involvement.

As shown in Table 8, when dichotomized risk and protective factors were utilized, the patterns of the relationships remained largely unchanged. However, the magnitude of the relationships was altered for certain variables. For instance, the link between number of entries to state's custody and resilience to mental health problems has increased when this risk factor was dichotomized. In contrast, the magnitude of the relationships between school transitions and resilience to mental health problems has decreased as a result of dichotomization. Changes in the magnitude of the relationships were also observed for

physical abuse; perceived benefit from negative events; religious practices; and reading levels.

Individual Influences of the Risk and Protective Factors: Multivariate Analyses

The first set of multivariate analyses was aimed at examining the individual impact of risk and protective factors on youth resilience. Binary logistic regression analyses were used to determine whether each risk and protective variable significantly differentiated between resilient and non-resilient youth. Tolerance and VIF values indicated that multicollinearity did not present a problem in these analyses.

Resilience to Mental Health Problems

Table 9 presents the results of logistic regression analysis with resilience to mental health problems serving as the dependent variable (only the final model is presented). Independent variables were entered into the regression equation in three blocks: (1) demographic indicators; (2) risk factors; and (3) protective factors. The goodness of fit statistics (Hosmer-Lemeshow test) indicated that the final model was a good fit for the data (χ^2=10.13; p=.25). The overall model, including three blocks of independent variables, was statistically significant (χ^2=48.17; p<.01). Both the demographic variables block, and the risk factors block, significantly contributed to the model (χ^2=20.48, p<.001; and 17.50, p<.05, respectively). However, the protective variables block did not contribute to the model significantly (χ^2=10.18; p=.33). The overall amount of variance accounted for in the final model was between 16% (Cox & Snell) and 26% (Nagelkerke).

Gender did not differentiate between resilient and non-resilient youth in any of the steps. Race was significant in the first step, suggesting non-whites were more likely to be

resilient to mental health problems than whites (OR=2.22; p<.05). However, when risk and protective factors were added in subsequent steps, race was no longer a significant predictor of resilience. In contrast, youth who left foster care prior to age 19 were about one-fourth as likely to be resilient as those who remained in foster care, after risk and protective factors were accounted for (OR=.28; p<.01). In the final model, none of the individual risk or protective factors significantly differentiated between resilient and non-resilient youth. Furthermore, 96.2% of resilient youth, but only 25.5% of the non-resilient youth, were classified correctly in the final model.

<u>Resilience to Substance Use</u>

Table 10 presents the results of logistic regression analysis with resilience to substance use serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=6.34; p=.60). The overall model, including three blocks of independent variables, was statistically significant (χ^2=46.95; p<.01). However, when individual blocks were examined, only the demographic variables block presented a significant contribution to the model (χ^2=15.63; p<.01). The risk factors block presented a weak trend towards significance (χ^2=14.70; p=.09); whereas the protective factors block presented a strong trend towards significance (χ^2=16.61; p=.05). The overall amount of variance accounted for in the final model was between 16% (Cox & Snell) and 23% (Nagelkerke).

Males were only about one-third as likely to be resilient as females, after risk and protective factors were accounted for (OR=.34; p<.01). Race did not differentiate between resilient and non-resilient youth; but those who left foster care prior to age 19 were about half as likely to be resilient as those who remained in care (OR=.45; p<.05).

When individual risk factors were considered, only family history of criminal involvement significantly differentiated between resilient and non-resilient youth. Youth possessing such history were less than half as likely to be resilient as those without such history (OR=.42; p<.05). None of the individual protective factors reached significance level, although there was a trend suggesting that higher levels of religious beliefs were associated with slightly higher likelihood of resilience (OR=1.08; p=.07). In the final model, 92.4% of resilient youth, and 41.2% of the non-resilient youth, were classified correctly.

Resilience to Criminal Involvement

Table 11 presents the results of logistic regression analysis with resilience to criminal involvement serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=6.88; p=.54). The overall model, including three blocks of independent variables, was statistically significant (χ^2=51.52; p<.001). However, when individual blocks were examined, the demographic variables block accounted for the largest contribution to the model (χ^2=28.06; p<.001). The risk factors block did not present a significant contribution (χ^2=6.49; p=.68); in contrast, the protective factors block did reach significance level (χ^2=16.96; p<.05). The overall amount of variance accounted for in the final model was between 17% (Cox & Snell) and 27% (Nagelkerke).

Males were less than one-fifth as likely to be resilient as females, after risk and protective factors were accounted for (OR=.16; p<.001). When demographic variables were entered at the first step, there was a strong trend indicating non-whites were more likely to be resilient than whites (OR=1.84; p<=.053). However, such trend became less

pronounced when risk and protective factors were added to the model (OR=1.94; p=.09). Similarly to previous findings, youth who left foster care prior to age 19 were about half as likely to exhibit resilience as those who remained in care (OR=.45; p<.05). None of the risk factors significantly differentiated between resilient and non-resilient youth, but each point of increase on the Perceived Benefit from Negative Events scale was associated with 8% increase in the likelihood of resilience (OR=1.08; p<.01). In addition, there was a trend indicating that youth who had a supportive adult in the community were only one-third as likely to be resilient as those who did not have a supportive adult (OR=.36; p=.055). In the final model, 95.6% of resilient youth, and 27.1% of the non-resilient youth, were classified correctly.

Overall Resilience

Table 12 presents the results of logistic regression analysis with overall resilience serving as the dependent variable (final model). As previously noted, overall resilience scores were dichotomized such that youth resilient in zero, one, or two domains were compared to youth resilient in three or four domains. The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=5.77; p=.67). The overall model, including three blocks of independent variables, was statistically significant (χ^2=61.11; p<.001). When individual blocks were examined, only the demographic variables block and the protective factors block significantly contributed to the model (χ^2=24.58; p<.001 and χ^2=20.89; p<.01 respectively). The contribution of the risk factors block was not significant, although a trend towards significance was detected (χ^2=15.63; p=.07). The overall amount of variance accounted for in the final model was between 20% (Cox & Snell) and 29% (Nagelkerke).

Gender was not significant when demographic variables were examined individually, but when risk and protective factors were added to the model, males were less than half as likely to be resilient as females (OR=.41; p<.05). Race did not differentiate between the groups; but youth who left foster care prior to age 19 were only about one-fourth as likely to be resilient in three or four domains as those who remained in care (OR=.28; p<.001). Youth with a history of sexual abuse were about one-third as likely to be resilient as those without such history (OR=.36, p<.01). In addition, each instance of school transition corresponded with a 15% decrease in the likelihood of resilience (OR=.85, p<.05). Among the protective factors, only higher perceived benefit from negative events significantly contributed to youth resilience (OR=1.06; p<.05). In addition, there was a trend suggesting that youth reporting higher levels of religious practices were somewhat more likely to be resilient (OR=1.07; p=.08). In the final model, 93% of resilient youth, and 42.9% of the non-resilient youth were classified correctly.

Cumulative Influences of the Risk and Protective Factors: Multivariate Analyses

The main goal of the present study was to explore how accumulation of risk and protective factors contributed to youth resilience. Binary logistic regressions were used to determine whether scores on cumulative risk and protection indices significantly differentiated between resilient and non-resilient youth, and whether the interaction term between such indices was significant. These analyses allowed an examination of the second, third, and fourth hypotheses of the present study. To achieve these goals, independent variables were entered in four blocks: (1) demographic indicators; (2) cumulative risk scores; (3) cumulative protection scores; and (4) interaction term between

cumulative risk and cumulative protection scores. The inclusion of the interaction term allowed an examination of potential moderation effects.

Resilience to Mental Health Problems

Table 13 presents the results of logistic regression analysis with resilience to mental health problems serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=5.70; p=.68). The overall model, including four blocks of independent variables, was statistically significant (χ^2=38.19; p<.001). When each block was examined independently, the demographic variables block, and the cumulative risk block, significantly contributed to the model (χ^2=20.48, p<.001; and χ^2=15.54, p<.001 respectively). The contributions of the protection block, as well as the interaction block, were not significant (χ^2=1.88, p=17; and χ^2=.27, p=59 respectively). The overall amount of variance accounted for was between 13% (Cox & Snell) and 21% (Nagelkerke).

Gender was not a significant predictor of resilience in any of the steps. Non-white race was associated with increased likelihood of resilience at the first step (OR=2.22; p<.05); but not when cumulative risk and protection scores were added to the model. In contrast, youth who left foster care prior to age 19 were about one-third as likely to be resilient as those who remained in care, even after risk and protection scores were accounted for (OR=.32; p<.01). In line with the expectation, each point of increase on the cumulative risk index was associated with 31% decrease in the odds of resilience to mental health problems (OR=.69; p<.001). Contrary to the expectation, cumulative protection scores did not differentiate between resilient and non-resilient youth. The interaction term was, likewise, not significant, suggesting that cumulative risk did not

moderate the relationship between cumulative protection and resilience. In the final model, 96.7% of resilient youth, but only 17.6% of the non-resilient youth, were classified correctly.

<u>Resilience to Substance Use</u>

Table 14 presents the results of logistic regression analysis with resilience to substance use serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=7.29; p=.50). The overall model, including four blocks of independent variables, was statistically significant (χ^2=28.36; p<.001). Detailed examination revealed that the demographic variables block, the risk index block, and the protection index block, were all statistically significant (χ^2=15.63, p<.01; χ^2=3.86, p<.05; and χ^2=7.92, p<.01 respectively). However, the contribution of the interaction block was not significant (χ^2=.92, p=.33). The overall amount of variance accounted for in the final model was between 10% (Cox & Snell) and 14% (Nagelkerke).

Males were about one-third as likely to be resilient to substance use as females, even after risk and protection scores were accounted for (OR=.36; p<.01). Race was not a significant predictor of resilience in any of the steps. In contrast, youth who left foster care prior to age 19 were about half as likely to be resilient as those who remained in care, after controlling for risk and protection scores (OR=.46; p<.05). When cumulative risk scores were examined independently, a strong trend indicated that higher risk scores were associated with decreased likelihood of resilience (OR=.86; p=.052). When cumulative protection scores were entered in a subsequent step, both risk scores, and protection scores, significantly contributed to resilience. Specifically, each point of

increase on the cumulative risk index was associated with 16% decrease in the odds of resilience to substance use (OR=.84, p<.05). In contrast, each point of increase on the cumulative protection index was associated with 26% increase in the odds of resilience (OR=1.26, p<.01). The interaction term was not significant, indicating the absence of moderation effects. In the final model, 94% of resilient youth, and 25% of the non-resilient youth, were classified correctly.

Resilience to Criminal Involvement

Table 15 presents the results of logistic regression analysis with resilience to criminal involvement serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=6.27; p=.61). The overall model, including four blocks of independent variables, was statistically significant (χ^2=29.92; p<.001). However, a detailed examination revealed that only the demographic variables block significantly contributed to the model (χ^2=28.06; p<.001). The risk index block did not present a significant contribution (χ^2=.70; p=.40); and the protection index block was, likewise, not significant (χ^2=.93; p=.33). Furthermore, there was no evidence for a significant contribution of the interaction block (χ^2=.20; p=.64). The overall amount of variance accounted for in the final model was between 10% (Cox & Snell) and 16% (Nagelkerke).

Males were about one-fourth as likely to be resilient to criminal involvement as females, after risk and protection scores were accounted for (OR=.24; p<.001). At the first step, there was a strong trend suggesting non-whites were more likely to be resilient than whites (OR=1.84; p=.053); but this trend disappeared after risk and protection scores were entered in subsequent steps. Youth who left foster care prior to age 19 were about

half as likely to be resilient as those who remained in care, after controlling for risk and protection scores (OR=.45; p<.05).

Contrary to the expectation, neither risk scores nor protection scores significantly differentiated between resilient and non-resilient youth. The interaction term was, likewise, non-significant indicating the absence of moderation effects. In the final model, 96.1% of resilient youth, but only 16.9% of the non-resilient youth, were classified correctly.

Overall Resilience

Table 16 presents the results of logistic regression analysis with overall resilience serving as the dependent variable (final model). As previously noted, youth resilient in zero, one, or two domains, were compared to youth resilient in three or four domains. The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=10.55, p=.22). The overall model, including four blocks of independent variables, was statistically significant (χ^2=42.98, p<.001). Analyses revealed that the first three blocks (i.e. demographic, risk, and protection) were all statistically significant (χ^2=24.58, p<.001; χ^2=8.40, p<.01; and χ^2=8.89, p<.01 respectively). However, the interaction block did not present a significant contribution to the model (χ^2=1.09; p=.29). The overall amount of variance accounted for in the final model was between 15% (Cox & Snell) and 21% (Nagelkerke).

Analyses revealed a very strong trend suggesting males were less likely to be resilient than females, after risk and protection scores were accounted for (OR=.54 p=.050). Race did not differentiate between the groups; however, youth who left foster care prior to age 19 were about one-fourth as likely to be resilient as those who remained

in care (OR=.26; p<.001). As expected, both cumulative risk scores and cumulative protection scores significantly differentiated between resilient and non-resilient youth. Specifically, each point of increase on the cumulative risk index was associated with 23% decrease in the odds of resilience in three or four domains (OR=.77; p<.01). Conversely, each point of increase on the cumulative protection index was associated with 28% increase in the odds of being resilient (OR=1.28; p<.01). The interaction term between risk and protection scores was not significant, suggesting that cumulative risk did not moderate the relationship between cumulative protection and resilience. In the final model, 95.2% of resilient youth, and 32.5% of the non-resilient youth, were classified correctly.

Cumulative Influences of the Risk and Protective Factors: Comparison Analyses

The creation of cumulative indices involves dichotomization of continuous variables to denote the presence or absence of the risk or protective effect. As previously noted, such dichotomizations may create biases, especially when the cut-off points are based on sample distributions. In the present study, efforts were made to utilize commonly accepted cut-off scores to allow meaningful comparisons across investigations. However, such cut-offs were not available for certain variables; and in these instances, sample distributions were utilized to assign dichotomous scores. In the sections above, median scores were used to assign dichotomous scores to these variables. The present section describes two comparison approaches for assigning such values: upper quartile split, and upper 15% split.

Upper Quartile Split: Bivariate Analyses

Dichotomizations based on upper quartile split were conducted for the following variables: Perceived Benefit from Negative Events, Benevolence of the World, religious practices, religious beliefs, number of times youth changed schools, and number of extracurricular activities. The latter two variables were added to check the validity of the previously used cut-off points (i.e. two or more school transitions; two or more activities). For each variable, youth scoring in the upper quartile of the distribution received a score of (1) indicating the presence of the risk or protective effect. All other youth received a score of (0). Dichotomization of other variables did not change, either due to the presence of commonly accepted cut-off scores (e.g. child maltreatment, reading levels) or due to severely skewed distributions in which upper quartile split was identical to median split (e.g. times placed in state's custody).

At the first phase of the analysis, cumulative risk and protection indices were computed, and their descriptive characteristics were examined. Risk scores ranged from 0 to 9, with a mean of 4.15. In contrast, protection scores ranged from 0 to 8, with a mean of 3.40. There was a significant positive correlation between the risk and protection indices ($r=.14$; $p<.05$). Bivariate correlations indicated that cumulative risk index was significantly negatively associated with resilience to mental health problems ($r=-.27$; $p<.001$), as well as with overall resilience ($r=-.17$; $p<.01$). The cumulative protection index was significantly positively associated with resilience to substance use ($r=.12$; $p<.05$); and a positive trend was present for overall resilience ($r=.10$; $p=.09$). Neither cumulative risk scores nor cumulative protection scores significantly correlated with resilience to criminal involvement.

Table 17 presents differences in youth risk and protection scores based on their demographic indicators. Independent samples t-test results revealed that females had higher cumulative risk scores compared with males, but their protection scores did not differ significantly. Whites had higher risk scores compared with non-whites, but no significant differences emerged in their protection scores. Finally, youth who left foster care prior to age 19 had similar risk and protection scores as those who remained in the foster care system.

Upper 15% Split: Bivariate Analyses

A second comparison strategy involved dichotomizing continuous variables based on upper 15% split. The choice of variables was identical to that described in the previous section. For each variable, youth scoring in upper 15% of the sample distribution received a score of (1); whereas all other youth received a score of (0).

Initially, cumulative risk and protection indices were computed, and their descriptive characteristics were examined. Cumulative risk scores ranged from 0 to 9, with a mean of 4.01. In contrast, cumulative protection scores ranged from 0 to 8, with a mean of 2.87. The cumulative indices were positively correlated with each other; this correlation was statistically significant ($r=.12$; $p<.05$). Bivariate correlations revealed that cumulative risk scores were significantly negatively associated with resilience to mental health problems ($r=-.27$; $p<.001$), as well as with overall resilience ($r=-.17$; $p<.01$). Correlations between cumulative protection scores and indicators of resilient functioning did not reach significance level.

Table 18 presents differences in youth risk and protection scores based on their demographic indicators. Independent samples t-test results revealed that females had

significantly higher risk scores than males, but their protection scores were similar. Whites had higher risk scores compared with non-whites; however, no significant differences emerged in their protection scores. Finally, youth who left foster care prior to age 19 did not differ significantly from those who remained in care in terms of risk or protection.

Multivariate Analyses: Summary of Comparison Strategies

Tables 19, 20, and 21 present a summary of findings from multivariate analyses that utilized three distinct strategies for creating cumulative risk and protection indices: median split, upper quartile split, and upper 15% split. As demonstrated in Table 19, utilizing different cut-off points for dichotomization had some effect on significance testing. Such effect; however, was restricted to two outcome domains only: substance use, and overall resilience. In the domains of mental health and criminal involvement, utilizing different dichotomization strategies had little influence on the study results. Specifically, higher cumulative risk was associated with decreased likelihood of resilience to mental health problems, regardless of the strategy employed. Similarly, no significant relationship was found between cumulative risk and protection scores and youth resilience to criminal involvement, across all three strategies.

In the domains of substance use and overall resilience, the impact of different strategies was observed for cumulative protection, but not for cumulative risk. This is to be expected; given that only one risk factor (number of school transitions) was subject to different dichotomization strategies. As demonstrated in Table 19, higher cumulative risk scores were associated with decreased likelihood of resilience to substance use across all three strategies. However, higher cumulative protection scores were associated with

increased likelihood of resilience to substance use only when median split and upper quartile split were utilized. When upper 15% split was used, no significant relationship was found between youth protection scores and their resilience to substance use. A similar pattern has emerged for youth overall resilience. Specifically, higher cumulative risk scores were associated with decreased likelihood of resilience across all three strategies. However, higher cumulative protection was associated with increased likelihood of resilience only for median split and upper quartile split. When upper 15% split was used, youth cumulative protection scores were unrelated to their overall resilience.

Tables 20 and 21 present comparisons of the accuracy of classification, as well as the amount of variance explained, using each of the three strategies. In general, the median split approach was associated with the largest percent of variance explained, as well as with the highest percent of correct classification, especially for non-resilient youth. It should be noted; however, that the differences between the three approaches were relatively minor.

In summary, median split and upper quartile split approaches produced fairly consistent results across all outcome indicators. The use of upper 15% split approach was associated with some discrepancies in the domains of substance use and overall resilience. Detailed results of multivariate logistic regression analyses using upper quartile split, and upper 15% split, approaches are presented in Appendix A.

Chapter 6

Discussion

The present study had several important objectives. The first objective was to evaluate the prevalence of resilience among emancipating foster youth in the following domains: mental health, substance use, criminal involvement, and being a "productive adult" (i.e. employed and/or at school). This study examined how many youth met the criteria for resilience in each domain, and how many were resilient across two, three, and four domains. In addition, the present study aimed to assess the impact of risk and protection in youth environments on the development of resilient functioning. It was hypothesized that higher cumulative risk would be associated with decreased likelihood of resilience, whereas higher cumulative protection would be associated with increased likelihood of resilience. Furthermore, a moderation effect was examined, suggesting that higher cumulative protection may be associated with increased likelihood of resilience only under the condition of relatively low risk.

In addition, the present study compared individual contributions of each risk and protective variable to the cumulative effects of both risk and protection. This comparison allowed an evaluation of the unique influences of each risk and protective variable on the indicators of resilient functioning. Furthermore, this study compared different approaches for constructing cumulative indices, in order to evaluate how different dichotomization strategies could have influenced the study results.

This chapter provides a summary of the study findings, as well as their interpretation in light of the existing literature. Implications, directions for future research, and study limitations will also be discussed.

Hypothesis 1: Prevalence of Resilient Functioning

In general, youth in the present sample were characterized by relatively high levels of resilience. In line with previous investigations (e.g. Bolger & Paterson, 2003), when each domain of functioning was examined independently, the majority of the youth met the criteria for resilience. The highest rates of resilience (80.7%) were observed for the domain of mental health. This is to be expected, given the stringent standards for non-resilience employed in the present study (i.e. meeting criteria for a DSM-IV diagnosis). If self-reported measures of emotional distress were used, or if sub-threshold symptoms were considered, the rates of resilience may have been somewhat lower. In addition, the present study assessed the presence of five mental disorders only – it is possible that some youth defined resilient in this investigation were suffering from other mental illness (e.g. schizophrenia, eating disorders).

The lowest rates of resilience (67%) were observed for being a "productive adult", highlighting possible difficulties encountered by the youth in the domains of education and employment. It should be noted; however, that this variable represented youths` situations at one point of time only. Some youth may have been "productive" (i.e. employed and/or at school) for long periods of time, but not when the interview was conducted. Future studies should use more nuanced assessments, particularly with respect to employment, and also take into account economic factors, such as the presence of economic recession.

The rates of substance use among youth in this sample were comparable or slightly higher than those found in previous investigations (Pecora et al., 2005; Stott, 2012). Results revealed that only 69.7% of the youth met criteria for resilience in this domain, indicating that 30.3% have used at least one illicit substance in the past year. It is noteworthy that the criteria for resilience in this study were based on substance use, rather than substance dependence. In addition, alcohol use was not included in the analysis. Some youth may refrain from using illicit substances, such as marijuana or hard drugs, but use alcohol frequently. Future studies should pay attention to alcohol use when examining resilience among emancipating foster youth.

Youth rates of criminal involvement were comparable, or somewhat lower, than those previously reported in this population (Brandford & English, 2004; Courtney & Dworsky, 2006; Courtney, 2009). The majority of the youth were resilient to criminal involvement; however, 22.3% reported some type of criminal conduct. The criteria used in the present investigation were relatively stringent - resilience labels were assigned based on involvement in serious criminal activities (e.g. selling drugs, involvement in a serious fight, carrying a gun), as well as being charged with an offense, rather than simply being arrested. Using such criteria may be associated with somewhat lower rates of criminal involvement found among the youth in this sample.

When youth overall resilience was examined, the rates were relatively high. More than two-thirds of the youth (70.8%) exhibited resilient functioning in at least three of the four domains studied. These figures provide partial support for the first hypothesis of the present study, indicating that more youth will meet criteria for resilience in one domain, compared with those meeting criteria for resilience in multiple domains. In line with the

expectation, the percentage of youth resilient in each single domain was relatively high (67% to 80.7%), whereas the percentage of youth resilient across all four domains was substantially lower (39.4%). However, a steady decrease in resilience rates as more domains were added was not observed. For instance, more youth were resilient in three or four domains than those who were resilient in two domains only. This result corresponds with the positive correlations found between different indicators of resilience. Such correlations were particularly strong for resilience to mental health problems, substance use, and criminal involvement, indicating that youth who were resilient in one of these domains, were also likely to be resilient in others.

The high rates of resilience observed in the present study corresponded with findings from at least two previous investigations examining this population (Daining & DePanfilis, 2007; Yates & Grey, 2012). In both investigations, the majority of the youth exhibited resilience across multiple domains of functioning. These results demonstrate that the deficit bias present in studies of this vulnerable population may have painted a misleading picture of youths` functioning over the years. While the rates of negative outcomes are, indeed, higher among foster youth than in the general population, the majority of emancipating foster youth appear to function successfully during the period of transition to adulthood.

Hypothesis 2: The Impact of Cumulative Risk on Youth Resilience

The second hypothesis of the present study indicated that higher cumulative risk would be associated with decreased likelihood of resilience in each domain of functioning, as well as overall. This hypothesis was only partially supported. As expected, higher cumulative risk was associated with decreased likelihood of resilience in

the domains of mental health and substance use. Furthermore, higher cumulative risk was associated with decreased likelihood of youth overall resilience (i.e. being resilient in three or four domains). Specifically, each point of increase on the cumulative risk index was associated with 31% decrease in the odds of resilience to mental health problems; 16% decrease in the odds of resilience to substance use; and 23% decrease in the odds of resilience in three or four domains. Noteworthy, these results imply that the impact of cumulative risk was the most significant for resilience to mental health problems.

Contrary to the expectation, no relationship was found between youth cumulative risk and their resilience to criminal involvement. This was an unexpected finding, as many of the risk factors included in the cumulative index (e.g. child maltreatment, criminal involvement in the family) were previously found to be associated with criminal involvement (e.g. Dannerbeck, 2005). A possible explanation for the absence of significant results may relate to the high-risk nature of this sample. It is possible that in the general population, risks such as child maltreatment and other family pathology (i.e. substance use, mental illness, delinquency) are strongly associated with increased likelihood of criminal involvement. However, among foster youth, such factors may be less important, as the majority of these youth have been exposed to these risks to some degree. Future studies should consider other risks salient for this population, particularly peer influences, and various child welfare factors (e.g. type of placement).

Hypothesis 3: The Impact of Cumulative Protection on Youth Resilience

The third hypothesis of the present study indicated that higher cumulative protection would be associated with increased likelihood of resilience in each domain, as well as overall. The study findings provided partial support for this hypothesis. In line

with the expectation, higher cumulative protection was found to be associated with increased likelihood of resilience in the domain of substance use. Furthermore, higher cumulative protection was also associated with increased likelihood of overall resilience. Specifically, each point of increase on the cumulative protection index was associated with 26% increase in the odds of resilience to substance use, and 28% increase in the odds of overall resilience.

Conversely, no significant relationship was found between cumulative protection scores and resilience to mental health problems. It is possible that the absence of such relationship is associated with the choice of variables included in the protection index. Previous research has shown that youth mental health is strongly associated with parenting variables, such as positive parental practices, and perceived quality of parent-child relationships (Guibord, Bell, Romano, & Rouillard, 2011; Luthar, 2006). In the present study, only one caregiver-related factor was included in the protection index (i.e. perceived helpfulness of biological family members). Future studies should examine additional indicators, such closeness with biological family members; and quality of relationship with current foster parents.

Cumulative protection index was also unrelated to resilience to criminal involvement. This result is somewhat unexpected, as many variables included in this index were found to be protective against criminal involvement (e.g. cognitive ability, attachment to school) (Luthar, 2006). It is possible that among youth in foster care, other protective factors carry more weight. Future investigations should examine the potential influence of peer factors, such as associations with prosocial peers, as well as positive peer relationships.

Hypothesis 4: The Presence of Moderation Effects

The fourth hypothesis of the present study examined whether cumulative risk moderated the relationship between cumulative protection and resilience. Specifically, it was hypothesized that cumulative protection would be associated with increased likelihood of resilience only under the condition of relatively low risk. The rationale for this hypothesis was that at a certain point, the risk may become so great that it simply "overwhelms" the adaptive capacities of the person (Flouri & Kallis, 2007). This hypothesis was not supported - no significant interaction effects were detected for any of the outcome indicators.

Failure to find significant moderation effects may have different interpretations. First, it may support the validity of "additive" models of resilience, in which risk and protection affect resilient functioning independently of one another (Fraser et al., 2004; Luthar, 2006). Empirical support for additive models has been reported in previous investigations (e.g. Dekovic, 1999). Nonetheless, it is also possible that the absence of moderation effects is associated with inadequate statistical power. Research has demonstrated that detecting interaction effects can be notoriously difficult, especially when both predictor and moderator variables are continuous (McClelland & Judd, 1993; Shieh, 2009). In the present study, power to detect interaction effects may have been reduced by factors such as restricted range, deviations from normality, and distribution of observations over many categories within the range (McClelland & Judd, 1993). These problems apply to both the predictor variable (i.e. cumulative protection index), as well as the moderator (i.e. cumulative risk index). Future investigations should include larger samples, as well as more refined measurement of cumulative risk and protection.

The Importance of Demographic Variables

In addition to the impact of cumulative risk and protection, this study examined the importance of demographic variables in relation to youth resilience. An intriguing finding emerging from this analysis was the consistent effect of youth foster care status on the indicators of resilient functioning. Across all indicators, youth who left foster care prior to age 19 were less likely to be resilient than those who remained in care. Specifically, those who left foster care were about one-third as likely to exhibit resilience to mental health problems; about one-half as likely to exhibit resilience to substance use and criminal involvement; and only about one-fourth as likely to exhibit resilience in three or four domains.

Several explanations may account for decreased likelihood of resilience among youth leaving foster care prior to age 19. One potential explanation relates to services provided to youth throughout their stay in care. Youth who stay in foster care voluntarily after the age of 18 are eligible for a variety of services, such as transitional living programs, financial support, and counseling. Furthermore, these youth maintain frequent contact with their caseworkers and independent living providers, who may serve as sources of support and consultation. In contrast, youth who leave foster care near the age of 18 loose the majority of these supports, and must negotiate the transition to independence completely on their own. This may translate to higher levels of emotional distress, and engagement in various risky behaviors.

A somewhat different explanation relates to youth pre-existing characteristics. Specifically, youth who choose to leave foster care immediately after reaching the age of maturity may also be those who were subject to difficult experiences in the system. These

difficult experiences may drive youth to cut ties with child welfare representatives, and attempt to negotiate the transition to adulthood completely on their own. Research indicates that difficult experiences in the system, such as placement instability, and insensitive caregiving on the part of the foster parents, may be associated with emotional and behavioral difficulties later in life (Courtney, 2009; Stott, 2011). Thus, youth who choose to leave foster care early may be the most susceptible to various negative outcomes due to prior difficult experiences. Certain personality qualities, such as impulsivity, and lack of proper planning, may also contribute to this trend.

Analysis of demographic variables also revealed that male gender was associated with decreased likelihood of resilience in the domains of substance use and criminal involvement. Specifically, males were only about one-third as likely to be resilient to substance use, and one-fourth as likely to be resilient to criminal involvement, as females. Gender did not contribute to resilience to mental health problems; however, a strong trend was detected for overall resilience. This trend indicated that males were less likely to be resilient in three or four domains as compared with females. Overall, the present analysis suggests that males emerge as a higher-risk group for exhibiting dysfunctional outcomes. These results are consistent with previous investigations in the area of resilience (Luthar, 2006); as well as with research focusing specifically on foster youth (e.g. Daining & DePanfilis, 2007).

It should be noted, that in the present sample, females had higher cumulative risk scores compared with males. Despite exposure to somewhat higher risk, females were more likely to exhibit resilience in the domains of substance use and criminal involvement. Furthermore, females were more likely to exhibit resilience in at least three

out of the four domains examined. These results suggest that the higher likelihood of resilience among females cannot be fully explained by the variables included in the present analysis. Furthermore, it is possible that the variables included operate somewhat differently by gender. Future investigations should examine how risk and protection interact with youth gender, to shed light on the mechanisms associated with increased likelihood of resilience among females.

Comparing Individual and Cumulative Influences of Risk and Protective Factors

In addition to examining the above-mentioned hypotheses, this study possessed several methodological goals. The first goal was to compare individual influences of each risk and protective variable to the cumulative effects of both risk and protection. The main purpose of these comparisons was to investigate the unique contribution of each risk and protective factor, and to evaluate the overall performance of the two statistical models.

The results of these analyses reveal an intriguing picture. When examined individually, most risk and protective factors did not differentiate between resilient and non-resilient youth in any of the domains. For resilience to mental health problems, none of the risk or protective variables reached significance levels in multivariate analyses. For resilience to substance use, the only variable presenting a significant contribution was family history of legal trouble. For resilience to criminal involvement, only perceived benefit from negative events significantly differentiated between resilient and non-resilient youth. Lastly, two risk factors and one protective factor significantly contributed to youth overall resilience (i.e. school transitions, history of sexual abuse, and perceived benefit).

In contrast, an examination of cumulative indices reveals a different picture. For instance, cumulative risk index presented a highly significant contribution for resilience to mental health problems; though, none of the individual risk factors significantly differentiated between resilient and non-resilient youth. Similarly, cumulative protection index presented a significant contribution for resilience to substance use; but none of the individual protective factors differentiated between resilient and non-resilient youth.

These seemingly contradicting findings may have methodological explanations. Specifically, the presence of moderate correlations between certain predictor variables may be responsible for the difficulty to detect significant findings. This phenomenon has been discussed by Burchinal, Roberts, Hooper, & Zeisel (2000). These authors noted that using moderately correlated predictors in regression analyses can "obscure…meaningful associations of individual predictors with the outcome variables due to deflated parameter estimates" (p. 794). The authors further noted that "it is possible to have an overall model that is highly significant in which no individual variable is a significant predictor…" (p. 794). In the present study, several predictor variables were moderately correlated with each other (e.g. child maltreatment variables, religious practices and religious beliefs). Although such correlations did not reach the multicolleniarity threshold of .80, they may have obscured the individual contributions of each risk and protective variable.

Another problem noted by Burchinal and colleagues (2000) relates to sample size. The authors compared the performance of cumulative risk models to that of individual models, and found that the number of risk factors included in some investigations may be too high for the sample size used. In the present analysis, the sample was only moderate in size; whereas the number of predictor variables was relatively large. Some scholars

recommend having 10 subjects for each predictor variable in regression analyses; in contrast, others suggest that at least 20 may be needed to have adequate statistical power (Munro, 2005). If the latter standard is used, it is possible that the power to detect individual influences was reduced.

It should be noted that the individual variables approach does possess certain advantages over the cumulative approach. First and foremost, this approach allows the retention of all information about the continuous predictors used (Burchinal et al., 2000). Such retention of information is not possible in the cumulative risk approach, as it requires dichotomization of continuous variables. A related advantage is that the amount of variance explained in individual approaches tends to be higher compared with cumulative approaches. This is not surprising, given that individual approaches retain far more information about each predictor variable (Burchinal et al., 2000). In the present study, both the accuracy of classification, and the amount of variance explained, were somewhat higher using the individual approach.

In the present investigation, the decision to focus on cumulative approaches is sensible, from both theoretical and methodological standpoints. From a theoretical standpoint, such an approach allowed to evaluate how accumulation of risk and protection related to youth resilience, and whether the impact of protection was contingent upon the level of risk. Examining cumulative influences is a valuable strategy, because accumulation of both risk and protective factors frequently occurs in real-world settings. From a methodological standpoint, moderate sample size, as well as relatively high correlations between certain predictor variables, supported the use of cumulative strategy over the individual approach.

Constructing Cumulative Indices: Comparison of Approaches

As previously noted, one drawback of using cumulative strategies is the need to dichotomize continuous predictor variables to denote the presence or absence of the risk or protective effect. To minimize potential biases, the present study compared several strategies for selecting cut-off points for dichotomization. The primary strategy employed was the median split approach. This approach was selected because most continuous predictors were non-normally distributed, making it difficult to use the quartile split approach common in the cumulative risk literature. The quartile split approach was used as a comparison strategy, in addition to a more extreme approach of upper 15% split. The use of three distinct approaches allowed an examination of how selecting different cut-off points for dichotomization may have influenced the study findings. It should be noted; however, that different dichotomization strategies were only used for those variables without commonly accepted cut-off scores readily available (e.g. clinical cut-offs, population norms).

Results revealed that utilizing different cut-off points for dichotomization had some influence on the study results. In general, the median split approach was associated with the largest percent of variance explained, as well as the highest percent of correct classification (especially for non-resilient youth). In terms of the impact on resilience indicators, resilience to mental health problems, as well as resilience to criminal involvement, were largely unaffected by changes in dichotomization strategies.

In contrast, resilience to substance use and overall resilience were influenced by utilizing different dichotomization strategies. Because only one risk factor (number of schools transitions) was subject to changes in dichotomization strategies, the differences

detected were restricted to the protection index only. For resilience to substance use, the median split approach and the upper quartile split approach produced largely comparable results. However, when upper 15% split approach was used; cumulative protection scores were no longer associated with resilience to substance use. A similar pattern has emerged when examining youth overall resilience. Specifically, median split and upper quartile split approaches produced comparable results. In contrast, when upper 15% split was used, higher cumulative protection was no longer associated with higher likelihood of resilience in three or four domains.

Overall, these results reveal a high degree of consistency between median split and upper quartile split approaches. However, discrepancies have emerged when upper 15% split approach was used in the analysis. One reason for such discrepancies may be that this cut-off point is relatively extreme, resulting in more significant loss of information compared with the less extreme strategies. As indicated by Farrington & Loeber (2000), more extreme splits may cause significant reductions in correlations between independent and dependent variables, resulting in loss of statistical power. Thus, using extreme approaches may not be recommended, especially when the sample size is relatively small.

Implications for Policy, Clinical Practice, and Theory

Implications for Policy

The John H. Chaffee Foster Care Independence Act of 1999, as well as subsequent legislations, expanded youth eligibility for various supportive services beyond the age of 18. As a result, the majority of the states now allow youth to keep their child welfare cases open until their 21st birthday. The findings of the present study support

such initiatives, indicating that youth who remain in foster care past the age of maturity may exhibit better outcomes than those who leave care earlier. These findings are consistent with those reported in several previous investigations (Daining & DePanfilis, 2007; Courtney & Dworsky, 2005).

Foster youth may not be fully aware of the negative consequences of closing their child welfare cases at the age of 18. For many youth, emancipation represents an opportunity for independence, as well as means of escape from the rules and regulations often imposed by child welfare representatives. These youth may not recognize the implications of their decision in terms of service receipt, such as eligibility for financial support, or participation in independent living programs. Caseworkers must encourage youth to keep their cases open, and explicitly state the potential consequences of not doing so. Furthermore, states should develop policies to allow youth to re-open closed cases in the period between ages 18 and 21.

Expanding education and employment preparation for youth emancipating from foster care would be a wise policy direction. In the present study, only 67% of the youth reported being employed and/or at school at the age of 19. Youth disconnected from educational and vocational settings may be at higher risk for negative outcomes; thus, efforts must be made to keep youth either in school or employed. Independent living programs typically include educational and vocational preparation components; however, youth participate in such programs at a relatively early age (i.e. during high school), and may not be fully prepared to take advantage of their content. Programs specifically designed for older youth are greatly needed, preferably those that include "hands-on" components, such as summer internships, assistance in applying to postsecondary

programs, and academic tutoring. Eligibility to participate in such programs should not be limited to youth with open cases only, as youth with closed cases may be at particular need for educational and vocational assistance. Although some states have been developing such programs (New Jersey, California); more states still need to follow suit.

<u>Implications for Clinical Practice</u>

Several important practice implications also emerge from the study results. First and foremost, this study draws attention to the differential impact of risk and protection on different aspects of youth functioning. For instance, resilience to mental health problems was strongly associated with risk accumulation; however, it was largely unrelated to protection accumulation. This suggests that in the domain of mental health, prevention programs aimed to reduce risks may be somewhat more effective than programs designed to foster protection.

In contrast, in the domain of substance use, both risk and protection accumulation was associated with resilient functioning. These findings imply that programs designed to foster protection may be an effective strategy for reducing youth engagement in substance use behaviors. Furthermore, analysis of individual risk factors revealed that youth with a history of criminal involvement in the family may have higher likelihood of using illicit substances. Youth in the foster care system should be evaluated for the presence of such history, and enrolled in various protection-building programs (e.g. mentoring, extracurricular activities) to offset the presence of potential risk.

Both risk and protection accumulation emerged as significant predictors of youth overall resilience. Individual analyses revealed that school changes, as well as history of sexual abuse, were associated with decreased likelihood of exhibiting competent

functioning. Youth in the foster care system should be screened for the presence of such risks, and offered appropriate interventions to address potential problems. Individual analyses also revealed that perceived benefit from negative events may serve as a protective factor for the development of resilience. This finding holds promise for developing intervention strategies designed to help foster youth find benefits in their negative experiences. Based on the study findings, such interventions may also be useful for youth exhibiting criminal behaviors.

Consistent with other resilience studies, males emerged as a high-risk group for exhibiting negative outcomes. One potential explanation for this finding may relate to males` reluctance to seek formal support and counseling. For instance, several studies have shown that males were less likely to participate in independent living programs compared with females, especially after the age of 18. This lack of support and supervision may be associated with engagement in risky behaviors, as well as other dysfunctional outcomes. Engaging male youth in aftercare programs is often difficult - attractive program components may include using sports and music, as well as presence of male role models among the staff.

Implications for Theory

The present study provided support for the utility of the cumulative risk model for understanding resilient functioning among youth emancipating from foster care. Results indicated that higher cumulative risk was associated with decreased likelihood of resilience in all domains of functioning, with the exception of criminal involvement. Furthermore, the majority of individual risk factors did not differentiate between resilient and non-resilient youth, whereas the accumulation of such risks was highly significant for

certain outcome domains. The present study also revealed that accumulation of protective factors may be important for the development of resilient functioning. For the most part, individual protective factors failed to differentiate between resilient and non-resilient youth; however, the accumulation of such factors was associated with increased likelihood of resilience in some domains.

The present study also aimed to investigate the validity of additive versus interactive models for explaining the development of resilience. Findings seem to provide support for additive models, in which risk independently increases the probability of dysfunction, whereas protection independently increases the probability of competence. However, because statistical power to detect interaction effects may have been limited; future investigations should attempt to replicate such findings using larger samples, and more refined measurement.

Lastly, these results support the need for increased specificity in resilience research, as called for by a number of resilience scholars (Luthar et al., 2000). The findings of the present investigation reveal that risk and protection may have different effects depending on the competence domain examined. This suggests that studying different aspects of resilient functioning individually (i.e. resilience to mental health problems, substance use, etc.) may be preferable to only examining youth "overall" resilience.

Limitations and Future Directions

<u>Study Limitations</u>

This research possesses several important limitations that should be considered. First, the sample is restricted to youth from several counties in one state; and may not be

representative of all youth in foster care. Currently, there is paucity of nationally-representative studies of youth emancipating from foster care – such studies are sorely needed to advance the knowledge base in this area. In the absence of nationally-representative studies, creating partnerships between local research initiatives that use similar methodologies may be beneficial.

Second, the study findings are limited by the attrition of subjects between the baseline and final interviews. As previously noted, male gender; past year posttraumatic stress disorder at the initial interview; history of juvenile detention by the first interview; and being released from the state's custody prior to age 19 were associated with decreased odds of being retained for the final interview. This means that the prevalence of resilience in the present investigation may be somewhat over-estimated. Ideally, multiple imputation techniques should be used in cases of non-random attrition. The research team of the VOYAGES study did use imputation techniques; however, they were not applied consistently across all variables. As a result, the author decided not to use imputed data. However, comparison analyses have been conducted with imputed data for the following indicators: substance use, criminal involvement, and being a "productive adult" (imputations were not available for mental health problems, and consequently, for overall resilience). These analyses did not reveal major deviations compared with non-imputed data, in terms of significance patterns.

The study findings are also limited by the specific definitions of resilience employed in each outcome domain. As previously noted, there are no agreed-upon definitions of resilient functioning; therefore, the way this construct is defined and measured may influence the study findings. Although the definitions used were based on

salient conceptual considerations, as well as recommendations from previous studies, they may have introduced biases. For instance, the fact that each resilience indicator was measured dichotomously could have resulted in loss of information. Furthermore, the inclusion of specific measures in each indicator (i.e. types of mental disorders, types of substances used) may have influenced the study results.

Certain limitations are associated with the use of cumulative risk and protection indices. This approach has been widely used in the literature; however, its downside is that the cut-off points used to dichotomize continuous variables are often restricted to a particular sample. Such sample-specific strategies may limit the generalizability of the findings across studies. In the present investigation, this problem was particularly relevant for the protection index, where commonly accepted cut-off scores were not available for many variables. The necessity to dichotomize continuous variables is an obvious limitation, although potential biases were partially controlled by comparing different cut-off points for dichotomization.

Lastly, the present study is restricted by the way certain predictor variables were measured. For instance, the use of reading level as proxy for cognitive ability may have been problematic for foreign-born youth (i.e. may be influenced by language proficiency). The use of perceived helpfulness of family members as proxy for positive relationships with biological relatives may also be problematic, and potentially inaccurate. In addition, substance use and criminal involvement measures may be particularly prone to reporting biases due to the sensitive nature of the questions asked.

Despite the presence of such limitations, this study adds to the literature on the topic of resilience among emancipating foster youth. The study results illustrate how

accumulation of risk and protection affects the development of resilient functioning among the youth, and point to important topics that warrant further investigation.

<u>Future Research Directions</u>

Future studies should focus their attentions on gender differences in the prevalence of resilience among emancipating foster youth. Similarly to previous studies, this investigation revealed that males were at increased risk for exhibiting negative outcomes compared with females. Specific pathways for the presence of gender differences should be examined in further detail. As previously noted, differences in service utilization may account for at least some of this discrepancy. Other potential explanations may include differences in social support, as well as biological differences in stress resistance. Furthermore, it is possible that certain risk and protective factors are more salient for females compared with males.

Future investigations should also explore why youth who remain in foster care past the age of 18 tend to exhibit better functioning than those who exit care earlier. As described in previous sections, service receipt, as well as youth pre-existing characteristics, may account for such results. Future studies should conduct mediation analyses to explore pathways for improved functioning among youth who remain in foster care after reaching the age of maturity.

Increased research attention should be given to the risk and protective factors related to youth engagement in criminal behaviors. The variables included in the present study failed to differentiate between resilient and non-resilient youth. Future studies should focus on peer factors, such as associations with deviant or prosocial peers, and the quality of peer relationships. In addition, the impact of placement type (e.g. relative and

non-relative foster homes versus congregate care) and other child welfare factors should also be examined.

Future studies in the area of resilience can benefit from more nuanced assessments of youth resilient functioning. For instance, including indicators such as youth length of employment, financial sustainability, school performance, and living arrangements, may provide a more accurate account of youth functioning. Measuring resilience over time, rather than at one point only, may be particularly beneficial.

Finally, additional research is needed to examine additive versus interactive models of resilience among emancipating foster youth. While the present study failed to detect interaction effects, limited statistical power may be at least partially responsible for this result. Studies utilizing larger samples, as well as more nuanced assessments of resilient functioning, are needed to examine the presence of potential moderation effects.

List of Tables

Demographic Variable	%
Gender	
Female	61.7
Male	38.3
Race	
White	41.7
Non-White	58.3
Left Foster Care Prior to Age 19	
No	48.5
Yes	51.5

Note: Non-whites include 93% African-American, 7% other races (2 American Indians, 1 Pacific Islander, 7 multiracial)

Table 2: Bivariate Correlations between Risk and Protective Factors among Youth Emancipating from Foster Care (N=264)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PhyAb		.53***	.28***	.04	.07	.12*	.14*	.12*	.14*	-.08	-.09	-.10	.11	.05	-.15*	-.03	.15*	.12*
2. PhyNeg			.19*	-.12*	.11	.12	.16***	.25***	.16*	-.03	-.09	-.10	.10	.008	-.17*	.09	.02	.15*
3. SexAb				-.00	.05	.15*	.17*	.07	.23***	.06	-.02	-.00	.14*	.12*	-.15*	-.05	.16*	.09
4. AgeCar					-.27***	.00	-.05	-.06	-.14*	-.03	.06	.02	.00	.04	.00	-.05	-.01	-.11
5. NmbCus						.08	.16*	.007	.11	.12*	-.01	.03	-.00	-.08	-.08	-.03	.01	.02
6. FamLeg							.20*	.33***	.17*	.19*	.06	.03	.03	.13*	-.00	.00	.02	-.00
7. FamEm								.29***	.15*	.10	.01	-.00	-.01	.07	-.06	.11	.06	-.06
8. FamSub									.02	.08	-.03	-.04	.07	.13*	.01	.15*	.04	.01
9. SchlTrn										.01	.02	-.04	.00	-.05	-.03	-.00	.14*	.01
10. RedLev											.11	.16*	-.06	.06	-.11	-.00	.01	-.01
11. BenWrld												.25***	-.00	.23***	.04	.00	.15*	.14*
12. PecBen													.11	.24***	-.02	.11	.13*	.18*
13. RelPrc														.58***	.01	.00	.22***	.28***
14. RelBel															.06	-.00	.21***	.18*
15. BioHlp																-.07	.01	-.01
16. SupAdl																	-.04	-.03
17. LikeSch																		.25***
18. ExtAct																		

PhyAb=physical abuse; PhyNeg=physical neglect; SexAb=sexual abuse; AgeCar=age of entry to foster care; NmbCus=number of times placed in state's custody; FamLeg=criminal involvement in the family; FamEm=mental health problems in the family; FamSub=substance abuse in the family; SchlTrn=number of school transitions; RedLev=reading level; BenWrld=benevolent world scale; PerBen=perceived benefit scale; RelPrc=religious practices; RelBel=religious beliefs; BioHlp=helpfulness of biological family; SupAdl=presence of supportive adult; LikeSch=attachment to school; ExtAc=number of extracurricular activities.

Note: Pearson product moment, point-biseral, and phi coefficients are presented. Continuous risk and protective variables were used in their original form.

*p<.05; ***p<.001

Table 3: Summary Statistics: Continuous Risk and Protective Factors among Youth Emancipating from Foster Care (N=264)

Variable	Mean (SD)	Median	Mode	Min/ Max^	Skewness (SE)	Kurtosis (SE)
Risk Factors						
Age of entry to care	10.87 (4.52)	13.00	15.00	0-16	-.722 (.150)	-.754 (.299)
Times placed in custody	1.32 (.73)	1.00	1.00	1-6	3.37 (.150)	14.93 (.299)
Number of school changes	2.06 (2.70)	1.00	0.00	0-20	2.64 (.150)	10.29 (.299)
Physical abuse	11.09 (6.17)	9.00	5.00	5-25	.83 (.150)	-.63 (.299)
Physical neglect	9.99 (4.94)	9.00	5.00	5-25	.91 (.150)	.15 (.299)
Protective Factors						
Perceived Benefit	31.84 (6.83)	33.00	34.00	12-44	-.55 (.150)	-.06 (.299)
Benevolent World	21.32 (3.16)	21.00	20.00	8-32	-.392 (.150)	1.95 (.299)
Religious practices	13.06 (5.03)	13.00	16.00	5-28	.358 (.150)	-.324 (.299)
Religious beliefs	20.29 (4.43)	20.00	20.00	7-28	-.461 (.150)	.10 (.299)
Number of extracurricular activities	1.13 (1.26)	1.00	0.00	0-7	1.35 (.150)	2.21 (.299)
Reading level	38.70 (6.36)	39.00	40.00	17-54	-.11 (.150)	.11 (.299)

Note: Continuous risk and protective factors were used in their original form; Min=Minimum, ^Max=Maximum

Table 4: Prevalence of Dichotomous Risk and Protective Factors among Youth Emancipating from Foster Care (N=264)

Risk Factor	(%)	Protective Factor	(%)
Early age of entry to care		Perceived Benefit	
Yes (younger than 10)	32.6	Protection	45.5
No	67.4	No protection	54.5
Number of entries to care		Benevolent World	
Risk (2 or more)	23.9	Protection	48.9
No risk	76.1	No protection	51.1
School transitions		Religious practices	
Risk (2 or more)	47.7	Protection	47.0
No risk	52.3	No protection	53.0
Moderate/severe physical abuse		Religious beliefs	
Yes	43.6	Protection	48.9
No	56.4	No protection	51.1
Moderate/severe physical neglect		Like school "very much"	
Yes	45.5	Yes	31.8
No	54.5	No	68.2
Sexual abuse		Reading level	
Yes	35.2	High school or higher	11.0
No	64.8	Below high school	89.0
Criminal involvement in family		Extracurricular activities	
Yes	66.3	Protection (2 or more)	30.7
No	33.7	No protection	69.3
Mental illness in family		Helpfulness bio family	
Yes	54.9	Yes	31.1
No	45.1	No	68.9
Substance abuse in family		Supportive adult	
Yes	82.2	Yes	84.5
No	17.8	No	15.5

Note: For measures of physical abuse and physical neglect, cut-off scores of 10 or higher were used to denote the presence of risk; youth reading levels were dichotomized based on grade levels recommended by WRAT3 test developers; scores on the following scales were dichotomized at the median: Perceived Benefit from Negative Evens, Benevolence of the World, religious practices, and religious beliefs. Scores above the median were used to denote the presence of protection.

Table 5: Differences in Cumulative Risk and Protection Scores Based on Youth
Demographic Characteristics: Independent Samples T-Tests (N=264)

	Females (n=163)	Males (n=101)	T-stat
Risk	4.54	3.95	2.40*
Protection	3.86	3.67	.872
	Whites (n=110)	**Non-Whites (n=154)**	**T-stat**
Risk	4.66	4.07	2.34*
Protection	3.44	4.03	-2.77**
	In care at age 19 (n=128)	**Left care prior to age 19 (n=136)**	**T-stat**
Risk	4.18	4.44	-1.04
Protection	3.85	3.73	.58

Note: Average scores on cumulative risk and protection indices are presented; median split was used to create cumulative indices. Risk scores ranged from 0 to 9; protection scores ranged from 0 to 8.

*p<.05; **p<.01

Table 6: Percentage of Emancipating Foster Youth Meeting Criteria for Resilience (N=264)

Resilience Indicator	%
Mental Health	
Resilient	80.7
Non-resilient	19.3
Substance Use	
Resilient	69.7
Non-resilient	30.3
Criminal Involvement	
Resilient	77.7
Non-resilient	22.3
Productive Adult	
Yes (Resilient)	67.0
No (Non-resilient)	33.0
Number of Resilience Domains ^	
0	2.7
1	9.8
2	16.7
3	31.4
4	39.4

Note: Categories of resilience defined as following: mental health=absence of major depression, manic episode, PTSD, GAD, and antisocial personality disorder in the past 12 months; substance use=youth did not use any of the following substances in the past 12 months: marijuana, amphetamines, sedatives, opiates, cocaine, hallucinogens, inhalants, nitrous oxide or amyl nitrate, and club drugs; Criminal involvement=youth not charged with an offence, did not sell drugs, did not physically attack, and did not carry a gun in the past 12months; "productive adult"=youth is either employed or at school (high school, technical/trade school, or college).

^ Score of 0 indicates youth is not resilient in any of the domains; score of 1 indicates youth is resilient in one domain; score of 2 indicates youth is resilient in two domains; score of 3 indicates youth is resilient in three domains; score of 4 indicates youth is resilient in four domains. The frequencies presented in the table do not distinguish among specific combinations of resilience domains.

Table 7: Bivariate Correlations between Risk and Protective Factors and Indicators of Resilient Functioning among Youth Emancipating from Foster Care (N=264)

Risk/Protective Factor	Mental Health	Substance Use	Criminal Involvement	Overall Resilience^
Risk				
Age of entry to care	.09	.03	.02	.03
Number of entries	-.10	-.11	-.04	-.06
School transitions	-.21***	-.03	-.08	-.17*
Physical abuse	-.14*	.06	-.01	-.01
Physical neglect	-.12	.04	.04	-.00
Sexual abuse	-.18*	-.01	.01	-.10
Criminal involvement	-.10	-.17*	.00	-.12
Mental health problems	-.15*	-.05	.02	-.04
Drug use in family	-.10	-.07	-.03	-.03
Protective				
Perceived Benefit	.12*	.09	.18*	.17*
Benevolent World	.08	.02	.06	.07
Religious practices	-.01	.15*	.06	.11
Religious beliefs	.07	.16*	.03	.11
Like school	-.03	.09	.03	.05
Reading level	-.08	-.13*	.00	-.07
Extracurricular activities	.04	.12*	.07	.13*
Helpfulness of bio family	.12*	.01	.00	.03
Presence of a supportive adult	.00	.05	-.07	.03
Cumulative risk index	-.27***	-.09	-.03	-.14*
Cumulative protection index	.06	.15*	.08	.16**

Note: Pearson product moment, point-biseral, and phi coefficients are presented; continuous variables used in their original form.

^Overall resilience scores ranged from 0 to 4.

*p<.05; **p<.01 ***p<.001

Table 8: Bivariate Correlations between Risk and Protective Factors and Indicators of Resilient Functioning: Dichotomized Risk and Protective Factors (N=264)

Risk/Protective Factor	Mental Health	Substance Use	Criminal Involvement	Overall Resilience^
Risk				
Early age of entry	-.09	-.03	-.03	-.05
Number of entries	-.15*	-.11	-.06	-.08
School transitions	-.14*	-.08	-.05	-.15*
Physical abuse	-.09	.03	-.04	-.03
Physical neglect	-.11	.07	.03	.02
Protective				
Perceived Benefit	.04	.10	.14*	.11
Benevolent World	.07	.00	.01	.05
Religious practices	-.07	.07	.01	.00
Religious beliefs	.05	.13*	-.00	.08
Reading level	.04	-.05	.10	.08
Extracurricular activities	.03	.13*	.10	.16**

Note: Only continuous risk and protective variables that were dichotomized are presented; Dichotomization of the following variables was based on median split: Benevolence of the World, Perceived Benefit from Negative Events, religious practices, and religious beliefs.

^Overall resilience scores ranges from 0 to 4.

*p<.05; **p<.01

Table 9: Contribution of Risk and Protective Factors to Youth Resilience to Mental
Health Problems - Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	.02	.46-2.46	---	ns
Non-white race	1.76	.76-3.94	---	ns
Left foster care before age 19	9.87	.13-.62	.28	<.01
Age of entry to care	2.91	.98-.17	---	ns
Number of times placed in care	.05	.60-1.48	---	ns
Number of times changed schools	.58	.83-1.08	---	ns
Physical abuse	.51	.91-.04	---	ns
Physical neglect	.07	.92-1.10	---	ns
Sexual abuse	1.72	.25-1.30	---	ns
Criminal involvement in the family	.38	.32-1.80	---	ns
Mental health problems in the family	.58	.32-1.62	---	ns
Substance abuse in the family	.74	.17-1.97	---	ns
Perceived benefit	2.38	.98-1.09	---	ns
Benevolent world	.36	.92-1.16	---	ns
Religious practices	.82	.87-1.04	---	ns
Religious beliefs	1.88	.96-1.19	---	ns
Extracurricular activities	.43	.79-1.58	---	ns
Reading level	.56	.91-1.03	---	ns
Helpfulness bio family	2.08	.79-4.15	---	ns
Supportive adult	.28	.47-3.65	---	ns
Likes school	.41	.34-1.72	---	ns

Cox & Snell R-Square = .16

Nagelkerke R-Square=.26

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Continuous IVs were used in their original form. Because resilience was coded (1) and non-resilience was coded (0),
positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of
resilience.

Table 10: Contribution of Risk and Protective Factors to Youth Resilience to Substance Use - Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	9.68	.18-.67	.34	<.01
Non-white race	.93	.34-1.44	---	ns
Left foster care before age 19	6.08	.24-.85	.45	<.05
Age of entry to care	.04	.92-1.06	---	ns
Number of times placed in care	1.76	.51-1.13	---	ns
Number of times changed schools	.02	.89-1.13	---	ns
Physical abuse	.39	.95-1.08	---	ns
Physical neglect	.16	.94-1.09	---	ns
Sexual abuse	1.92	.30-1.22	---	ns
Criminal involvement in the family	5.57	.20-.86	.42	<.05
Mental health problems in the family	.09	.46-1.75	---	ns
Substance abuse in the family	1.01	.24-1.57	---	ns
Perceived Benefit	1.12	.97-1.07	---	ns
Benevolent World	.00	.90-1.11	---	ns
Religious practices	.38	.94-1.11	---	ns
Religious beliefs	3.28	.99-1.19	---	ns
Extracurricular activities	.54	.83-1.49	---	ns
Reading level	1.92	.91-1.01	---	ns
Helpfulness bio family	.03	.53-2.13	---	ns
Supportive adult	.57	.61-3.05	---	ns
Likes school	.13	.56-2.28	---	ns

Cox & Snell R-Square = .16

Nagelkerke R-Square=.23

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Continuous IVs were used in their original form. Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 11: Contribution of Risk and Protective Factors to Youth Resilience to Criminal Involvement - Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	20.66	.07-.35	.16	<.001
Non-white race	2.84	.89-4.20	---	ns
Left foster care before age 19	4.53	.21-.93	.45	<.05
Age of entry to care	.02	.91-1.07	---	ns
Number of times placed in care	1.56	.46-1.18	---	ns
Number of times changed schools	.68	.83-1.07	---	ns
Physical abuse	1.43	.89-1.02	---	ns
Physical neglect	2.27	.98-1.17	---	ns
Sexual abuse	1.96	.25-1.25	---	ns
Criminal involvement in the family	.30	.58-2.62	---	ns
Mental health problems in the family	1.72	.78-3.47	---	ns
Substance abuse in the family	.70	.25-1.74	---	ns
Perceived Benefit	9.70	1.03-1.14	1.08	<.01
Benevolent World	1.17	.94-1.19	---	ns
Religious practices	1.00	.95-1.14	---	ns
Religious beliefs	2.03	.84-1.02	---	ns
Extracurricular activities	.02	.70-1.34	---	ns
Reading level	.03	.95-1.06	---	ns
Helpfulness bio family	.27	.38-1.74	---	ns
Supportive adult	3.69	.12-1.02	---	ns
Likes school	.00	.45-2.12	---	ns

Cox & Snell R-Square = .17

Nagelkerke R-Square=.27

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Continuous IVs were used in their original form. Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 12: Contribution of Risk and Protective Factors to Youth Overall Resilience:
Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	5.80	.20-.84	.41	<.05
Non-white race	.12	.54-2.36	---	ns
Left foster care before age 19	13.84	.14-.54	.28	<.001
Age of entry to care	.00	.92-1.07	---	ns
Number of times placed in care	.68	.55-1.26	---	ns
Number of times changed schools	5.22	.74-.97	.85	<.05
Physical abuse	.26	.92-1.04	---	ns
Physical neglect	.27	.94-1.10	---	ns
Sexual abuse	7.23	.17-.76	.36	<.01
Criminal involvement in the family	.15	.41-1.78	---	ns
Mental health problems in the family	.15	.57-2.31	---	ns
Substance abuse in the family	2.13	.18-1.28	---	ns
Perceived Benefit	5.94	1.01-1.11	1.06	<.05
Benevolent World	1.82	.96-1.20	---	ns
Religious practices	3.05	.99-1.17	---	ns
Religious beliefs	.02	.90-1.08	---	ns
Extracurricular activities	.31	.68-1.23	---	ns
Reading level	1.30	.91-1.02	---	ns
Helpfulness bio family	.49	.38-1.57	---	ns
Supportive adult	1.18	.68-3.70	---	ns
Likes school	2.10	.82-3.65	---	ns

Cox & Snell R-Square = .20

Nagelkerke R-Square=.29

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Continuous IVs were used in their original form. Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 13: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to Mental Health Problems – Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	.07	.54-2.24	---	ns
Non-white race	2.46	.87-3.40	---	ns
Left foster care before age 19	9.34	.15-.66	.32	<.01
Cumulative risk index	15.02	.57-.83	.69	<.001
Cumulative protection index	2.09	.94-1.46	---	ns
Interaction term (risk x protection)	.27	.87-1.08	---	ns

Cox & Snell R-Square = .13

Nagelkerke R-Square=.21

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Median split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 14: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to Substance Use – Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	11.61	.20-.62	.36	<.01
Non-white race	.49	.45-1.45	---	ns
Left foster care before age 19	6.71	.26-.83	.46	<.05
Cumulative risk index	5.05	.72-.97	.84	<.05
Cumulative protection index	6.91	1.06-1.50	1.26	<.01
Interaction term (risk x protection)	.92	.95-1.13	---	ns

Cox & Snell R-Square = .10

Nagelkerke R-Square=.14

Note: CI=confidence intervals; ns=not significant; Non-significant odds ratios are not presented.
Median split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 15: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to Criminal Involvement – Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	18.42	.12-.46	.24	<.001
Non-white race	2.58	.89-3.19	---	ns
Left foster care before age 19	5.61	.23-.87	.45	<.01
Cumulative risk index	1.05	.78-1.08	---	ns
Cumulative protection index	1.00	.91-1.34	---	ns
Interaction term (risk x protection)	.20	.89-1.07	---	ns

Cox & Snell R-Square = .10

Nagelkerke R-Square=.16

Note: CI=confidence intervals; ns=not significant; non-significant odds ratios are not presented.
Median split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 16: Contribution of Cumulative Risk and Protection Scores to Youth Overall
Resilience- Binary Logistic Regression Analysis (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	3.85	.29-.99	--	ns
Non-white race	.31	.65-2.15	--	ns
Left foster care before age 19	17.62	.14-.49	.26	<.001
Cumulative risk index	9.88	.66-.91	.77	<.01
Cumulative protection index	7.16	1.06-1.53	1.28	<.01
Interaction term (risk x protection)	1.09	.95-1.14	--	ns

Cox & Snell R-Square = .15

Nagelkerke R-Square=.21

Note: CI=confidence intervals; ns=not significant; non-significant odds ratios are not presented.
Median split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood
of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 17: Differences in Cumulative Risk and Protection Scores Based on Youth Demographic Indicators – Upper Quartile Split (N=264)

	Females (n=163)	Males (n=101)	T-stat
Risk	4.40	3.75	2.63**
Protection	3.51	3.23	1.27
	Whites (n=110)	**Non-Whites (n=154)**	**T-stat**
Risk	4.51	3.89	2.46*
Protection	3.22	3.53	-1.45
	In care at age 19 (n=128)	**Left care prior to age 19 (n=136)**	**T-stat**
Risk	4.03	4.27	-.99
Protection	3.35	3.46	-.52

Note: Average cumulative risk and protection scores are presented; Upper quartile split was used to create cumulative indices.
Cumulative risk scores ranged from 0 to 9; Cumulative protection scores ranged from 0 to 8.

*p<.05; **p<.01

Table 18: Differences in Cumulative Risk and Protection Scores Based on Youth Demographic Indicators - Upper 15% Split (N=264)

	Females (n=163)	Males (n=101)	T-stat
Risk	4.26	3.61	2.75**
Protection	2.99	2.68	1.58
	Whites (n=110)	Non-Whites (n=154)	T-stat
Risk	4.36	3.77	2.42*
Protection	2.83	2.90	-.43
	In care at age 19 (n=128)	Left care prior to age 19 (n=136)	T-stat
Risk	3.89	4.13	-1.06
Protection	2.77	2.97	-1.03

Note: Average cumulative risk and protection scores are presented; Upper 15% split was used to create cumulative indices.
Cumulative risk scores ranged from 0 to 9; Cumulative protection scores ranged from 0 to 8.

*p<.05; **p<.01

Table 19: Utilizing Different Dichotomization Strategies When Constructing Cumulative Risk and Protection Indices: Comparison of Odds Ratios from Binary Logistic Regression Analyses (N=264)

Resilience Domain	Median Split			Upper Quartile Split			Upper 15% Split		
	Risk	Protection	Interaction	Risk	Protection	Interaction	Risk	Protection	Interaction
Mental Health	.69***	ns	ns	.69***	ns	ns	.69***	ns	ns
Substance Use	.84*	1.26**	ns	.85*	1.20*	ns	.85*	ns	ns
Criminal Involvement	ns	ns	ns	ns	ns	ns	ns	ns	ns
Overall Resilience	.77**	1.28**	ns	.79**	1.20*	ns	.79**	ns	ns

Note: Only significant odds ratios are presented; ns=not significant.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table 20: Utilizing Different Dichotomization Strategies When Constructing Cumulative Risk and Protection Indices: Comparison of the Accuracy of Classification (N=264)

Note: Classification table is a method for evaluating the accuracy of the logistic regression model. This method involves comparing predicted values of the

	% Correct Classification			
Dichotomization Strategy	Mental Health	Substance Use	Criminal Involvement	Overall Resilience
Median Split				
Resilient	96.7	94.0	96.1	95.2
Non-resilient	17.6	25.0	16.9	32.5
Upper Quartile Spit				
Resilient	96.7	94.0	95.6	94.7
Non-resilient	17.6	22.5	15.3	28.6
Upper 15% Split				
Resilient	98.1	97.8	95.6	93.0
Non-resilient	13.7	21.2	15.3	24.7

dependent variable to the observed values. In this table, percentage of correct classification is presented.

Table 21: Utilizing Different Dichotomization Strategies When Creating Cumulative Risk and Protection Indices: Comparing the Amount of Variance Explained (N=264)

	%Variance Explained			
Dichotomization Strategy	*Mental Health*	*Substance Use*	*Criminal Involvement*	*Overall Resilience*
Median Split				
Cox & Snell	13	10	10	15
Nagelkerke	21	14	16	21
Upper Quartile Spit				
Cox & Snell	13	09	11	13
Nagelkerke	21	12	16	18
Upper 15% Split				
Cox & Snell	13	07	11	12
Nagelkerke	21	11	16	18

Appendix A

Comparison Strategies for Creating Cumulative Risk and Protection Indices

Results from Multivariate Logistic Regression Analyses

Upper Quartile Split

Resilience to Mental Health Problems

Table A1 presents results of logistic regression analysis with resilience to mental health problems serving as the dependent variable (only the final model is presented). The goodness of fit statistics indicated that the model was a good fit for the data (χ^2=4.80, p=.77). The overall model, including four blocks of independent variables, was statistically significant (χ^2=37.99, p<.001). Detailed examination revealed that the demographic variables block, as well as the cumulative risk block, presented a significant contribution to the model (χ^2=20.48, p<.001; and χ^2=16.33, p<.001 respectively). However, the cumulative protection block, as well as the interaction block, did not reach significance level (χ^2=1.09, p=.29; and χ^2=.08, p=76 respectively). The overall amount of variance accounted for in the final model was between 13% (Cox & Snell) and 21% (Nagelkerke).

Gender and race were not significantly associated with resilience to mental health problems; however, youth who left foster care prior to age 19 were only about one-third as likely to be resilient as those who remained in care (OR=.31; p<.01). Each point of increase on the cumulative risk index was associated with 31% decrease in the odds of being resilient (OR=.69; p<.001). In contrast, cumulative protection scores did not contribute to resilience significantly, and the interaction term was, likewise, not significant. In the final model, 96.7% of resilient youth, and 17.6% of the non-resilient youth, were classified correctly.

Resilience to Substance Use

Table A2 presents results of logistic regression analysis with resilience to substance use serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=10.45; p=.23). The overall model, including four blocks of independent variables, was statistically significant (χ^2=24.93; p<.001). Analyses revealed that the demographic variables block, as well as cumulative protection block, significantly contributed to the model (χ^2=15.63, p<.01; and χ^2=5.13, p<.05 respectively). The contribution of the risk block approached significance (χ^2=3.55, p=.059); and the contribution of the interaction block was not significant (χ^2=.60, p=.43). The overall amount of variance accounted for in the final model was between 9% (Cox & Snell) and 12% (Nagelkerke).

Males were about one-third as likely to be resilient to substance use as females (OR=.37; p<.01). Race was not a significant predictor of resilience. Youth who left foster care prior to age 19 were about half as likely to be resilient as those who remained in care (OR=.45; p<.01). When cumulative risk scores were examined independently, higher scores were related to decreased likelihood of resilience by a trend only (OR=.87; p=.062). When cumulative protection scores were entered in a subsequent step, both risk scores, and protection scores, significantly contributed to resilience. In the final model, each point of increase on the cumulative risk index was associated with 15% decrease in the odds of being resilient (OR=.85, p<.05). In contrast, each point of increase on the cumulative protection index was associated with 20% increase in the odds of being resilient (OR=1.20, p<.05). The interaction term was not significant. In the final model, 94% of resilient youth, and 22.5% of the non-resilient youth, were classified correctly.

Resilience to Criminal Involvement

Table A3 presents results of logistic regression analysis with resilience to criminal involvement serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=3.63, p=.88). The overall model, including four blocks of independent variables, was statistically significant (χ^2=30.63; p<.001). Detailed analysis revealed that only the demographic variables block significantly contributed to the model (χ^2=28.06; p<.001). The risk index block did not present a significant contribution to the model (χ^2=.74; p=.38), and the protection index block was, likewise, non-significant (χ^2=1.18; p=.27). Furthermore, the interaction block did not reach significance level (χ^2=.63; p=.42). The overall amount of variance accounted for in the final model was between 11% (Cox & Snell) and 16% (Nagelkerke).

Males were about one-fourth as likely to be resilient to criminal involvement as females, after risk and protection scores were accounted for (OR=.24; p<.001). Race was not a significant predictor of resilience; however, youth who left foster care prior to age 19 were less than half as likely to be resilient as those who remained in care (OR=.44; p<.05). Neither risk scores, nor protection scores, significantly differentiated between resilient and non-resilient youth. The interaction term was, likewise, non-significant. In the final model, 95.6% of resilient youth, but only 15.3% of the non-resilient youth, were classified correctly.

Overall Resilience

Table A4 presents results of logistic regression analysis with overall resilience serving as the dependent variable (final model). The goodness of fit statistics indicated that the model was a good fit for the data (χ^2=5.29, p=.72). The overall model, including

four blocks of independent variables, was statistically significant (χ^2=37.33, p<.001). Detailed examination revealed that the first three blocks (i.e. demographic, risk, protection) were statistically significant (χ^2=24.58, p<.005; χ^2=7.95, p<.01; and χ^2=4.73, p<.05 respectively). However, the interaction block was not significant (χ^2=.06, p=.80). The overall amount of variance accounted for was between 13% (Cox & Snell) and 18% (Nagelkerke).

Analyses revealed a strong trend suggesting males were less likely to be resilient than females (OR=.55 p=.058). Race did not differentiate between the groups; however, youth who left foster care prior to age 19 were only about one-fourth as likely to be resilient as those who remained in care (OR=.26; p<.001). Both cumulative risk scores and cumulative protection scores significantly contributed to youth overall resilience. Each point of increase on the cumulative risk index was associated with 21% decrease in the odds of being resilient (OR=.79; p<.01). Conversely, each point of increase on the cumulative protection index was associated with 20% increase in the odds of resilience (OR=1.20; p<.05). The interaction term between risk and protection scores was not significant. In the final model, 94.7% of resilient youth, and 28.6% of the non-resilient youth were classified correctly.

Table A1: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to

Mental Health Problems – Upper Quartile Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	.03	.52-2.18	---	N/S
Non-white race	2.72	.89-3.47	---	N/S
Left foster care before age 19	9.89	.15-.64	.31	<.01
Cumulative risk index	15.26	.57-.83	.69	<.001
Cumulative protection index	1.08	.89-1.41	---	N/S
Interaction term (risk x protection)	.08	.87-1.10	---	N/S

Cox & Snell R-Square = .13

Nagelkerke R-Square=.21

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper quartile split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A2: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to Substance Use – Upper Quartile Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	11.26	.21-.66	.37	<.01
Non-white race	.21	.49-1.54	---	N/S
Left foster care before age 19	7.27	.25-.80	.45	<.01
Cumulative risk index	4.36	.73-.99	.85	<.05
Cumulative protection index	4.22	1.02-1.42	1.20	<.05
Interaction term (risk x protection)	.60	.94-1.12	---	N/S

Cox & Snell R-Square = .09

Nagelkerke R-Square=.12

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper quartile split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A3: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to

Criminal Involvement – Upper Quartile Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	18.15	.12-.46	.24	<.001
Non-white race	2.84	.91-3.23	---	N/S
Left foster care before age 19	6.02	.23-.84	.44	<.05
Cumulative risk index	1.21	.77-1.07	---	N/S
Cumulative protection index	1.36	.92-1.37	---	N/S
Interaction term (risk x protection)	.63	.87-1.05	---	N/S

Cox & Snell R-Square = .11

Nagelkerke R-Square=.16

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper quartile split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A4: Contribution of Cumulative Risk and Protection Scores to Youth Overall Resilience – Upper Quartile Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	3.59	.30-1.02	--	N/S
Non-white race	.64	.70-2.27	--	N/S
Left foster care before age 19	18.17	.14-.48	.26	<.001
Cumulative risk index	8.97	.67-.92	.79	<.01
Cumulative protection index	3.95	1.00-1.44	1.20	<.05
Interaction term (risk x protection)	.06	.92-1.10	--	N/S

Cox & Snell R-Square = .13

Nagelkerke R-Square=.18

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper quartile split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Upper 15% Split

Resilience to Mental Health Problems

Table A5 presents results of logistic regression analysis with resilience to mental health problems serving as the dependent variable (final model). The goodness of fit statistics indicated that the model was a good fit for the data (χ^2=7.20; p=.51). The overall model, including four blocks of independent variables, was statistically significant (χ^2=37.57; p<.001). Detailed examination revealed that the demographic variables block, as well as the cumulative risk block, were statistically significant (χ^2=20.48, p<.001; and χ^2=15.47, p<.001 respectively). However, the cumulative protection block, as well as the interaction block, were not significant (χ^2=.68, p=.40; and χ^2=.92, p=.33). The overall amount of variance accounted for in the final model was between 13% (Cox & Snell) and 21% (Nagelkerke).

Gender and race were not significantly related to resilience to mental health problems. In contrast, youth who left foster care prior to age 19 were only about one-third as likely to be resilient as those who remained in care (OR=.31; p<.01). Furthermore, each point of increase on the cumulative risk index was associated with 31% decrease in the odds of resilience (OR=.69; p<.001). In contrast, cumulative protection scores were not significantly related to resilience, and the interaction term was, likewise, not significant. In the final model, 98.1% of resilient youth, but only 13.7% of the non-resilient youth, were classified correctly.

Resilience to Substance Use

Table A6 presents results of logistic regression analysis with resilience to substance use serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was an adequate fit for the data (χ^2=14.67; p=.06). The overall model, including four blocks of independent variables, was statistically significant (χ^2=21.85; p<.01). Detailed analysis revealed that only the demographic variables block presented a significant contribution to the model (χ^2=15.63; p<.01). The contribution of the cumulative risk block approached significance (χ^2=3.47; p=.06); but the contribution of protection block was not significant (χ^2=2.53; p=.11). The contribution of the interaction block, was, likewise, not significant (χ^2=.20; p=.64). The overall amount of variance accounted for in the final model was between 7% (Cox & Snell) and 11% (Nagelkerke).

Males were about one-third as likely to be resilient to substance use as females, after risk and protection scores were accounted for (OR=.37; p<.01). Race was not a significant predictor of resilience; in contrast, youth who left foster care prior to age 19 were less than half as likely to be resilient as those who remained in care (OR=.45; p<.01). When cumulative risk scores were examined independently, there was a trend suggesting higher risk scores were associated with decreased likelihood of resilience (OR=.87; p=.065). When protection scores were entered in a subsequent step, the risk index became significant, indicating that each point of increase was associated with 15% decrease in the odds of being resilient (OR=.85; p<.05). Cumulative protection scores did not significantly differentiate between resilient and non-resilient youth; and the

interaction term was, likewise, not significant. In the final model, 97.8% of resilient youth, and 21.2% of the non-resilient youth, were classified correctly.

Resilience to Criminal Involvement

Table A7 presents results of logistic regression analysis with resilience to criminal involvement serving as the dependent variable (final model). The goodness of fit statistics indicated that the final model was a good fit for the data (χ^2=5.89, p=.65). The overall model, including four blocks of independent variables, was statistically significant (χ^2=31.03; p<.001). Detailed analysis revealed that only the demographic variables block significantly contributed to the model (χ^2=28.06; p<.001). The cumulative risk block did not present a significant contribution (χ^2=.79; p=.37), and the cumulative protection block was, likewise, not significant (χ^2=.57; p=.44). The interaction block also failed to reach significance level (χ^2=1.59; p=.20). The overall amount of variance accounted for in the final model was between 11% (Cox & Snell) and 16% (Nagelkerke).

Male were about one-fourth as likely to be resilient as females, after risk and protection scores were accounted for (OR=.24; p<.001). Race was not a significant predictor of resilience; however, youth who left foster care prior to age 19 were less than half as likely to be resilient as those who remained in care (OR=.43; p<.05). Neither risk scores, nor protection scores significantly differentiated between resilient and non-resilient youth. The interaction term was, likewise, non-significant. In the final model, 95.6% of resilient youth, and 15.3% of the non-resilient youth, were classified correctly.

Overall Resilience

Table A8 presents results of logistic regression analysis with overall resilience serving as the dependent variable (final model). The goodness of fit statistics indicated

that the model was a good fit for the data (χ^2=8.06; p=.42). The overall model, including four blocks of independent variables, was statistically significant (χ^2=35.64; p<.001). Detailed examination revealed that the demographic variables block, as well as the cumulative risk block, contributed to the model significantly (χ^2=24.58, p<.001; and χ^2=7.85, p<.01 respectively). The contribution of the cumulative protection block approached significance (χ^2=3.20; p=.07); and the contribution of the interaction block was not significant (χ^2=.00; p=.98). The overall amount of variance accounted for in the final model was between 12% (Cox & Snell) and 18% (Nagelkerke).

Analyses revealed a strong trend suggesting males were less likely to be resilient than females, controlling for their risk and protection scores (OR=.56; p=.058). Race did not differentiate between the groups; however, youth who left foster care prior to age 19 were only about one-fourth as likely to be resilient as those who remained in care (OR=.26; p<.001). Furthermore, each point of increase on the cumulative risk index was associated with 21% decrease in the odds of being resilient (OR=.79; p<.01). In contrast, cumulative protection scores were associated with resilience by a trend only (p=.08). The interaction term between risk and protection scores was not significant. In the final model, 93% of resilient youth, and 24.7% of the non-resilient youth, were classified correctly.

Table A5: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to

Mental Health Problems – Upper 15% Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	.04	.53-2.21	---	N/S
Non-white race	3.18	.94-3.61	---	N/S
Left foster care before age 19	9.84	.15-.64	.31	<.01
Cumulative risk index	14.18	.57-.83	.69	<.001
Cumulative protection index	1.30	.89-1.50	---	N/S
Interaction term (risk x protection)	.91	.82-1.07	---	N/S

Cox & Snell R-Square = .13

Nagelkerke R-Square=.21

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper 15% split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A6: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to Substance Use – Upper 15% Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	11.09	.21-.67	.37	<.01
Non-white race	.07	.52-1.63	---	N/S
Left foster care before age 19	7.30	.25-.80	.45	<.01
Cumulative risk index	3.95	.73-.99	.85	<.05
Cumulative protection index	2.23	.95-1.40	---	N/S
Interaction term (risk x protection)	.20	.92-1.13	---	N/S

Cox & Snell R-Square = .07

Nagelkerke R-Square=.11

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper 15% split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A7: Contribution of Cumulative Risk and Protection Scores to Youth Resilience to

Criminal Involvement – Upper 15% Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	18.09	.12-.46	.24	<.001
Non-white race	3.02	.93-3.28	---	N/S
Left foster care before age 19	6.14	.22-.84	.43	<.05
Cumulative risk index	1.12	.77-1.08	---	N/S
Cumulative protection index	.77	.88-1.38	---	N/S
Interaction term (risk x protection)	1.57	.83-1.04	---	N/S

Cox & Snell R-Square = .11

Nagelkerke R-Square=.16

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper 15% split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood
of resilience; negative coefficients indicate decreased likelihood of resilience.

Table A8: Contribution of Cumulative Risk and Protection Scores to Youth Overall Resilience - Upper 15% Split (N=264)

Variable	Wald χ^2	CI	Exp(B) Odds Ratio	P-value
Male gender	3.58	.30-1.02	---	N/S
Non-white race	.98	.75-2.39	---	N/S
Left foster care before age 19	18.17	.14-.48	.26	<.001
Cumulative risk index	8.48	.67-.92	.79	<.01
Cumulative protection index	2.91	.97-1.46	---	N/S
Interaction term (risk x protection)	.00	.90-1.11	---	N/S

Cox & Snell R-Square = .12

Nagelkerke R-Square=.18

Note: CI=confidence intervals; N/S=not significant; Non-significant odds ratios are not presented.
Upper 15% split was used to create cumulative risk and protection indices.
Because resilience was coded (1) and non-resilience was coded (0), positive coefficients indicate increased likelihood of resilience; negative coefficients indicate decreased likelihood of resilience.

References

Anctil, T.M., McCubbin, L.D., O'Brien, K., & Pecora, P. (2007). An evaluation of recovery factors for foster care alumni with physical or psychiatric impairments: Predictors of psychological outcomes. *Children & Youth Services Review*, *29*(8), 1021-1034.

Anthony, E.J. (1974). The syndrome of the psychologically invulnerable child. In E.J Anthony & C. Kouperink (Eds.). *The child in his family: Children at psychiatric risk* (Vol. 3, pp. 3-10). New York: Wiley.

Appleyard, K., Egeland, B., van Dulmen, M. H. M., & Sroufe, L. A. (2005). When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *46*, 235–245.

Auslander, W. F., McMillen, J. C., Elze, D., Thompson, R. Jonson-Reid, M. & Stiffman, A. (2002). Mental health problems and sexual abuse among adolescents in foster care: Relationship to HIV risk behaviors and intentions. *AIDS and Behavior, 6*, 351-359.

Baker, J. A., & Maupin, A. N. (2009). School satisfaction and children's positive school adjustment. In R. Gilman, E. S. Huebner, &M. J. Furlong (Eds.), *Handbook of positive psychology in the schools* (pp. 189 – 196). New York: Routledge.

Barber, B. L., Eccles, J. S., & Stone, M. R. (2001). Whatever happened to the jock, the brain, and the princess? Young adult pathways linked to adolescent activity involvement and social identity. *Journal of Adolescent Research, 16*, 429–455.

Barskowa, T., & Oesterreich, R. (2009). Posttraumatic growth in people living with a Serious medical condition and its relation to physical and mental health: A systematic review. *Disability and Rehabilitation*, *31*(21), 1709-1733.

Barth, R. (1990). On their own: The experiences of youth after foster care. *Child and Adolescent Social Work*, *7*, 419-440.

Bartko, W.T., & Eccles, J.S. (2003). Adolescent participation in structured and unstructured activities: A person-oriented analysis. *Journal of Youth and Adolescence*, *32*(4), 233-241.

Begle, A.M., Dumans, J.E., & Hanson, R.F. (2010). Predicting child abuse potential: An empirical investigation of two theoretical frameworks. *Journal of Clinical Child and Adolescent Psychology*, *39*(2), 208-219.

Bernstein, D.P., & Fink, L. (1998). *The Childhood Trauma Questionnaire Manual*. San Antonio: The Psychological Corporation.

Biederman, J., Faraone, S.V., Hirshfeld-Becker, D.R., Friedman, D., Robin, J.A., & Rosenbaum, J.F. (2001). Patterns of psychopathology and dysfunction in high-risk children of parents with panic disorder and major depression. *American Journal of Psychiatry*, *158*, 49-57.

Biederman, J., Faraone, S.V., Monuteaux, M.C., & Feighner, J.A. (2000). Patterns of alcohol and drug use in adolescents can be predicted by parental substance use disorders. *Pediatrics*, *106*(4), 792-797.

Bolger, K. E., & Patterson, C. J. (2003). Sequelae of child maltreatment: Vulnerability and resilience. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 156-181). New York: Cambridge University Press.

Brandford, C., & English, D. (2004). Foster youth transition to independence study. Office of Chidlren's Administration Research. Seattle: WA.

Brodsky, B.S., Oquendo, M., Ellis, S., Haas, G.L., Malone, K.M., & Mann, J.J. (2001). The relationship of childhood abuse to impulsivity and suicidal behavior in adults with major depression. *American Journal of Psychiatry*, *158*, 1871-1877.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press, Cambridge: MA.

Brondenbrenner, U. (1994). Ecological models of human development. In M. Gauvain & M. Cole (Eds.), *Readings on the development of children*, 2nd ed. (pp. 37-43). NY: Freeman.

Brook, J. S., Whiteman, M., Gordon, A. S., & Brook, D. W. (1988). The role of older brothers in younger brothers' drug use viewed in the context of parent and peer influences. *Journal of Genetic Psychology*, *151*, 59-75.

Burchinal, M.R., Roberts, J.E., Hooper, S., & Zeisel, S.A. (2000). Cumulative risk and early cognitive development: A comparison of statistical risk models. *Developmental Psychology, 36*(6), 793-807.

Campbell, R., Dworkin, E., & Cabral, G. (2009). An ecological model of the impact of sexual assault on women's mental health. *Trauma, Violence, and Abuse*, *10*, 225-246.

Carter Narendorf, S. & McMillen, J.C. (2010). Substance use and substance use disorders as foster youth transition to adulthood. *Children and Youth Services Review, 32*, 113-119.

Casey Family Foundation (2008). Supporting success: Improving higher education outcomes for   students from foster care. Retrieved December 5, 2010 from http://www.casey.org/Resources/Publications/HigherEdFramework.htm

Casey Family Foundation (2007). Examining outcomes for young adults served in out-of-home   care. Retrieved December 5, 2010 from http://www.casey.org/Resources/Publications/CFPYAS2006.htm

Casey Family Foundation (2006). It's my life: Postsecondary education and training. Retrieved December 5, 2010 from http://www.casey.org/Resources/Publications/IMLPostsecondaryEd.htm

Cicchetti, D., & Rogosch, F. A. (1997). The role of self-organization in the promotion of resilience in maltreated children. *Development and Psychopathology*, *9*, 797-815.

Cicchetti, D., & Valentino, K. (2006). An ecological-transactional perspective on child maltreatment: Failure of the average expectable environment and its influence on child development. In: D. Cicchetti & D.J. Cohen (Eds.) *Developmental Psychopathology*. 2nd *Ed*. (pp.129-201). Hoboken, NJ: John Wiley & Sons.

Cohler, B.J. (1987). Vulnerability, resilience, and the study of lives. In E.J. Anthony & B.J. Cohler (Eds.), *The invulnerable child* (pp. 363-424). New York: Guilford Press.

Collins, M.E., Paris, R., & Ward, R.L. (2008). The permanence of family ties: Implications for youth transitioning from foster care. *American Journal of Orthopsychiatry, 78*(1), 54-62.

Collins, M.E., Spencer, R., & Ward, R. (2010). Supporting youth in the transition from foster care: Formal and informal connections. *Child Welfare*, *89*(1), 125-143.

Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C., Maughan, B., (2007). Resilience to   adult psychopathology following childhood maltreatment: Evidence from a community sample. *Child Abuse & Neglect, 31*, 211–229.

Congressional Research Service (2008). *Youth transitioning from foster care: Background, federal programs, and issues for Congress.* Congressional Research Service Report for Congress. Washington, DC: Congressional Research Service.

Conger, D., & Rebeck, A. (2001). How children's foster care experiences affect their education. New York, NY: New York City Administration for Children's Services and Vera Institute of Justice.

Cook, S.K. (1992). Long term consequences of foster care for adult well-being. Ph.D. Dissertation, University of Nebraska, Lincoln.

Cook, R., & Sedlak. A. (1995). National Evaluation of Independent Living Programs. In E. V. Mech & J. R. Rycraft (Eds). *Preparing Foster Youths for Adult Living.* (pp.19-26). Washington, DC: Child Welfare League of America, Inc.

Courtney, M.E. (2009). Describing the problem: Outcomes for older youth exiting the foster care system in the U.S. In B. Kerman, A.B. Maluccio & M.M. Freundlich (Eds.), *Achieving permanence for older children and youth in foster care.* New York: Columbia University Press.

Courtney, M.E., & Dworsky, A. (2006). Early outcomes for young adults transitioning from out-of-home care in the USA. *Child and Family Social Work*, *11*, 209-219.

Courtney, M., Piliavin, I., Grogan–Kaylor, A., & Nesmith, A. (2001). Foster youth transitions to adulthood: A longitudinal view of youth leaving care. *Child Welfare, 80* (6), 685-715.

Cowan, P.A., & Cowan, C.P. (2006). Developmental psychopathology from family systems and family risk factors perspectives: Implications for family research, practice, and policy. In *Developmental Psychopathology: Theory and Method* (pp. 530-587). New York: Wiley.

Daining, C. & DePanfilis, D. (2007). Resilience of youth in transition from out-of home care to adulthood. *Children & Youth Services Review*, *29*, 1158-1178.

Dallaire, D.H. (2007). Incarcerated mothers and fathers: A comparison of risk for children and families. *Family Relations*, *56*, 440-453.

Dallaire, D.H., & Wilson, L.C. (2010). The relation of exposure to parental criminal activity, arrest, and sentencing to children's maladjustment. *Journal of Child and Family Studies*, *19*, 404-418.

Dannerbeck, A.M. (2005). Differences in parenting attributes, experiences and behaviors Of delinquent youth with and without a history of parental incarceration. *Youth Violence and Juvenile Justice*, *3*, 199–213.

Davis, C.G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and growing from the experience: Two construals of meaning. *Journal of Personality and Social Psychology*, *75,* 561-574.

Dekovic, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence*, *28*(6), 667-685.

Drapeau, S., Saint-Jacques, M. C., Lepine, R., Begin, G., & Bernard, M. (2007). Processes that contribute to resilience among youth in foster care. *Journal of Adolescence, 30(*6), 977-999.

Drummond, D.C., & Fitzpatrick, G. (2000) Children of substance misusing parents. In P. Reder, M. McClure, & A. Jolley (Eds.) *Family matters: Interfaces between child and adult mental health* (pp. 135-149). Routledge: London.

Drumaret A.C., Coppel-Batsch M, Couraud S. (1997). Adult outcome of children reared for long term period in foster families. *Child Abuse and Neglect*, *21*(10), 911-927.

DuMont, K. A., Widom, C. S., & Czaja, S. J. (2007). Predictors of resilience in abused and neglected children grown-up: The role of individual and neighborhood characteristics. *Child Abuse & Neglect*, *31*, 255-274.

Dworsky, A. (2005). The economic self sufficiency of Wisconsin's former foster youth. *Children and Youth Services Review*, *27*, 1085–1118.

Dworsky, A., & Courtney, M. (2010). Does expanding foster care beyond age 18 promote postsecondary educational attainment? University of Chicago: Chapin Hall. Retrieved December 5, 2010 from: http://www.chapinhall.org/sites/default/files/publications/Midwest_IB1_Educational_Attainment.pdf

Dworsky, A., & Courtney, M. (2009). Homelessness and the transition from foster care to adulthood. *Child Welfare*, *88*(4), 23-56.

Dworsky, A., & Perez, A. (2010). Helping former foster youth graduate from college through campus support programs. *Children and Youth Services Review. 32*(2), 255–263.

Ehrensaft, M. K., Cohen, P., Brown, J., Smailes, E., Chen, H., & Johnson, J. G. (2003). Intergenerational transmission of partner violence: A 20-year prospective study. *Journal of Consulting and Clinical Psychology, 71*, 741–753.

Elmor, G.M., & Huebner, E.S. (2010). Adolescents` satisfaction with school experiences: Relationships with demographics, attachment relationships, and school engagement behavior. *Psychology in the Schools*, *47*(6), 525-537.

Epstein, J.A., Botvin, G.J., Griffin, K.W., & Diaz, T. (2001). Protective factors buffer effects of risk factors on alcohol use among inner-city youth. *Journal of Child and Adolescent Substance Abuse*, *11*(1), 77-90.

Farrington, D.P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behavior and Mental Health, 10*, 100-122.

Farrington, D. P., Loeber, R., Jolliffe, D., & Pardini, D. A. (2008). Promotive and risk Processes at different life stages. In R. Loeber, D. P. Farrington, M. Stouthamer-Loeber, & H. Raskin White (Eds.), *Violence and serious theft: Development and prediction from childhood to adulthood* (pp. 169-230). New York: Routledge.

Flouri, E. (2008). Contextual risk and child psychopathology. *Child Abuse & Neglect*, *32*, 913-917.

Flouri, E., & Kallis, C. (2007). Adverse life events and psychopathology and prosocial Behavior in late adolescence: Testing the timing, specificity, accumulation, gradient, and   moderation of contextual risk. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*(12), 1651-1659.

Fong, R., Schwab, J., & Armour, M. (2006). Continuity of activities and child well-being For foster care youth. *Children and Youth Services Review*, *28*, 1359-1374.

Fraser, M. W., Kirby, L. D., & Smokowski, P. R. (2004). Risk and resilience in childhood. In M.W. Fraser (Ed.), *Risk and resilience in childhood: An ecological perspective* (2nd ed., pp.13–66). Washington, DC: NASW.

Garmezy, N. (1974). The study of competence in children at risk for severe psychopathology. In   E.J. Antony & C. Koupernick (Eds.), *The child in his family: Vol. 3 Children at psychiatric risk* (pp.77-97). New York: Wiley.

Garmezy, N. (1985). Stress-resistant children: the search for protective factors. In J. E. Stevenson (Ed.). *Recent research in developmental psychopathology* (pp. 213-233).   Oxford: Pergamon Press.

Hammen, C. (2003). Risk and protective factors for children of depressed parents. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp.50-75). New York: Cambridge University Press.

Haskett, M. E., Nears, K., Sabourin Ward, C., & McPherson, A. V. (2006). Diversity in adjustment of maltreated children: Factors associated with resilient functioning. *Clinical Psychology Review*, *26*, 796.

Hass, M., & Graydon, K. (2009). Sources of resiliency among successful foster youth. *Children& Youth Services Review*, *31*(4), 457-463.

Heller, S. S., Larrieu, J. A., D'Imperio, R., & Boris, N. W. (1999). Research on resilience To child maltreatment: Empirical considerations. *Child Abuse & Neglect*, *23*, 321-338.

Helzer, J. E., Spitznagel, E. L., & McEvoy, L. (1987). The predictive validity of lay Diagnostic Interview Schedule diagnosis in the general population: A comparison with physician examiners. *Archives of General Psychiatry, 44*(12), 1069-1077.

Hill, S.Y., Shen, S., Lowers, L., & Locke, J. (2000). Factors predicting the onset of adolescent drinking in families at high risk for developing alcoholism. *Biological Psychiatry, 48*(4), 265-275.

Hines, A.M., Merdinger, J. & Wyatt, P. (2005). Former foster youth attending college: Resilience and the transition to young adulthood. *American Journal of Orthopsychiatry*, *75*(3), 381-394.

Ho, S.M., Chan, C.L.W., & Ho, R.T.H. (2004). Post-traumatic growth in Chinese cancer survivors. *Psychooncology*, *13*, 377–389.

Horowitz, A.V., Widom, C.S., McLaughlin, J., & White, H.R. (2001). The impact of childhood abuse and neglect on adult mental health: A prospective study. *Journal of Health and Social Behavior*, *42*(2), 184-201.

Huebner, E. S., & Gilman, R. (2006). Students who like and dislike school. *Applied Quality of Life Research*, *1*, 139 – 150.

Hughes, D. M., Condron, B., Jackson, N., Pitchal, E., Garton, N., & Elliott, S. P. (2008). *Preparing our kids for education, work and life: A report of the task force on youth aging out of DSS care*. The Boston Foundation. Retrieved December 9, 2010 from http://www.tbf.org/uploadedFiles/tbforg/Utility_Navigation/Multimedia_Library/Reports/DSS_Report_0522.pdf

Jaffee, S. R., Caspi, A., Moffitt, T.E., Polo-Tomas, M., & Taylor, A. (2007). Individual, family, and neighborhood factors distinguish resilient from non-resilient maltreated children: A cumulative stressors model, *Child Abuse and Neglect*, *31*(3), 231-253.

Jaffee, S. R., & Gallop, R. (2007). Social, emotional, and academic competence among children who have had contact with child protective services: Prevalence and stability estimates. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46,* 757-765.

Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social Cognition*, *7,* 113-136.

Jones, L. (2011). The first three years after foster care: A longitudinal look at the adaptation of 16 youth to emerging adulthood. *Children and Youth Services Review, 33*, 1919-1929.

Jonson-Reid, M., Scott, L.D., McMillen, J.C., & Edmond, T. (2007). Dating violence among emancipating foster youth. *Children and Youth Services Review, 29*, 557-571.

Kaller, M.E., Frazier, P.A., Anders, S.L., Tashiro, T., Tomich, P., Tennen, H., & Park, C. (2008). Assessing the psychometric properties of the World Assumptions Scale. *Journal of Traumatic Stress*, *21*(3), 326-332.

Kaplan, H. B. (2005). Understanding the concept of resilience. In R. B. Brooks & S. Goldstein (Eds.), *Handbook of resilience in children* (pp. 39-47). New York: Kluwer Academic/Plenum.

Kaplan, H. B. (1999).Toward an understanding of resilience: A critical review of definitions and models. In M. D. Glantz, & J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 17-84). New York: Kluwer Academic/Plenum.

Keller, T.E., Cusick, G.R., & Courtney, M.E. (2007). Approaching the transition to adulthood: Distinctive profiles of adolescents aging out of the child welfare system. *Social Services Review*, *81*, 453-484.

Kinard, E. M. (1998). Methodological issues in assessing resilience in maltreated children. *Child Abuse and Neglect*, *22*(7), 669-680.

Lee, B.R., Munson, M.R., Ware, N.C., Ollie, M.T., Scott, L.D., McMillen, J.C. (2006). Experiences of and attitudes toward mental health services among older youths in care. *Psychiatric Services, 57,* 487-492.

Lemon, K., Hines, A.M., & Merdinger, J. (2005). From foster care to young adulthood: The role of independent living programs in supporting successful transitions. *Children and Youth Services Review*, *27*(3), 251-270.

Lemon Osterling, K. & Hines, A. (2006) Mentoring adolescent foster youth: promoting resilience during developmental transitions. *Child and Family Social Work 11, 242-253.*

Lenz-Rashid, S. (2006). *Emancipating from foster care in the Bay Area: What types of Programs and services are available for youth aging out of the foster care system?* San Francisco, CA: Zellerbach Family Foundation. Retrieved December 20, 2010 from:
http://www.bassc.net/html/pdfs/FINALAgingOutOfFosterCare.pdf

Leon, S.C., Ragsdale, B., Miller, S.A., & Spacarelli, S. (2008). Trauma resilience among youth in substitute care demonstrating sexual behavior problems. *Child Abuse & Neglect*, *32*(1), 67-81.

Leverton, T.J. (2003). Parental psychiatric illness: The implications for children. *Current Opinion in Psychiatry*, *16*, 395-402.

Luecken, L.J., & Gress, J.L. (2010). Early adversity and resilience in emerging adulthood. In J. Reich, A. Zautra, & J. Hall (eds). Handbook of Adult Resilience. New York: Guildford.

Luthar, S. S. (2006). Resilience in development: A synthesis of research across five decades. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology: Risk, disorder, and adaptation* (pp. 740-795). New York: Wiley.

Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, *71*, 543-562.

Luthar, S.S., & Cushing, G. (1999). Measurement issues in the empirical study of resilience: An overview. In M. D. Glantz, & J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 129–160). New York: Kluwer Academic/Plenum.

Luthar, S.S., D'Avanzo, K., & Hites, S. (2003). Maternal drug abuse versus other psychological disturbances: Risk and resilience among children. In *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp.104-129). New York: Cambridge University Press.

Luthar, S. S., & Zelazo, L. B. (2003). Research on resilience: An integrative review. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp.510–549). New York: Cambridge University Press.

Luthar, S.S., & Zigler, E. (1991). Vulnerability and competence: A review of research on resilience in childhood. *American Journal of Orthopsychiatry, 61*, 6–22.

MacMillan, H.L., Flemming, J.E., Streiner, D.L., et al. (2001). Child abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry*, *158*, 1878– 1883.

Mahoney, J.L. (1997). From companions to convictions: Peer groups, school engagement, and the development of criminality. Paper presented at the biennial meeting of the Society for Research on Child Development, Washington, DC.

Manly, J.T., Kim, J.E., Rogosch, F.A., & Cicchetti, D. (2001). Dimensions of child maltreatment and children's adjustment: Contributions of developmental timing and subtype. *Development and Psychopathology*, *13*, 759-782.

Masten, A.S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, *56*, 227-238.

Masten, A.S. (1999). Resilience comes of age: Reflections on the past and outlook for the next generation of research. In M. D. Glantz, & J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 282-296). New York: Kluwer Academic/Plenum.

Masten, A.S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity. In M. Wang & E. Gordon (Eds.), *Risk and resilience in inner city America: Challenges and prospects*. (pp. 3-25). Hillsdale, NJ: Erlbaum.

Masten, A. S., Burt, K., Roisman, G. I., Obradovic, J., Long, J. D., & Tellegen, A. (2004). Resources and resilience in the transition to adulthood: Continuity and change. *Development and Psychopathology, 16*, 1071-1094.

Masten, A.S., & Coatsworth, J.D. (1998). The development of competence in favorable And unfavorable environments. *American Psychologist*, *53*, 205-220.

Masten, A.S., Garmezy, N., Tellegen, A., Pellegrini, D.S., Larkin, K., & Larsen, A. (1988). Competence and stress in school children: The moderating effects of individual and family qualities. *Journal for Child Psychiatry and Psychology, 28*, 745–764.

Masten, A. S., Hubbard, J.J., Gest, S.D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Adaptation in the context of adversity: Pathways to resilience and maladaption from childhood to late adolescence." *Development and Psychopathology*, *11*(1), 143-169.

Masten, A.S., & Tellegen, A. (2012). Resilience in developmental psychopathology: Contributions of the Project Competence Longitudinal Study. *Development and Psychopathology, 24*, 345-361.

Masten, S. A., & O'Dougherty, W. M. (2010). Resilience over lifespan: Developmental perspectives on resistance, recovery and transformation. In Reich, J.W., Zautra, A.J., & Hall, J. S. (Eds.), *Handbook of adult resilience* (pp. 213-237). New York: Guildford.

Masten, A. S., & Powell, J. L. (2003). A resilience framework for research, policy, and practice. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 1-25). New York: Cambridge University Press.

McClelland, G.H., & Judd, C.M. (1993). Statistical difficulties for detecting interactions and moderator effects. *Psychological Bulletin, 114*(2), 376-390.

McGloin, J. M., & Widom, C. S. (2001). Resilience among abused and neglected children grown up. *Development and Psychopathology*, *13*, 1021-1038.

McMillen, J. C., & Fisher, R.H. (1998). The Perceived Benefit Scales: Measuring Perceived positive life changes after negative life events. *Social Work Research, 22*, 173-187.

McMillen, J.C., & Raghavan, R. (2009). Pediatric to adult mental health service use of young people leaving the foster care system. *Journal of Adolescent Health, 44*, 7-13.

McMillen, J. C., Zima, B., Auslander, W., Scott, L., Munson, M. R., Ollie, M., & Spitznagel, E. (2005). Prevalence of psychiatric disorders among older youths in the foster care system. *Journal of the American Academy of Child and Adolescent Psychiatry*, *44*(1), 88−95.

McMillen, J. C., Zuravin, S.J., & Rideout, G.B. (1995). Perceived benefit from child sexual abuse. *Journal of Consulting and Clinical Psychology 63*, 1037-1043.

McWey, L.M., & Mullis, A.K. (2004). Improving the lives of children in foster care: The impact of supervised visitations. *Family Relations*, *53*(3), 293-300.

Merdinger, J., Hines, A.M., Lemon, K., & Wyatt, P. (2005). Pathways to college for former foster youth: toward understanding factors that contribute to educational success. *Child Welfare*, *84*(6), 867-896.

Mersky, J.P., & Topitzes, J. (2010). Comparing early adult outcomes of maltreated and non-maltreated children: A prospective longitudinal investigation. *Children and Youth Services Review, 32*(8), 1086-1096.

Miller, K.M. (2006). The impact of parental incarceration on children: An emerging need For effective interventions. *Child and Adolescent Social Work Journal*, *23*(4), 472-486.

Miller, L., Davies, M., & Greenwald, S. (2000). Religiosity and substance use and abuse among adolescents in the National Comorbidity Survey. *Journal of the American Academy of Child & Adolescent Psychiatry*, *39*(9), 1190–1197.

Miller, L., & Gur, M. (2002). Religiosity, depression, and physical maturation in adolescent girls. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(2), 206-214.

Molnar, B.E., Buka, S.L., Kessler, R.C. (2001). Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Survey. *American Journal of Public Health*, *91*, 753–760.

Monson, C.M., Gradus, J.L., La Bash, H.A., Griffin, M.G., & Resick, P.A. (2009). The role of couples` interacting world assumptions and relationship adjustment in women's post disaster PTSD symptoms. *Journal of Traumatic Stress*, *22(*4), 276-281.

Montgomery, P., Donkoh, C., & Underhill, K. (2006). Independent living programs for young   people leaving the care system. The state of the evidence. *Children and Youth Services Review*, *28*, 1435-1448.

Munson, M.R., & McMillen, J.C. (2010). Trajectories of depression symptoms among older youths exiting foster care. *Social Work Research, 34*(4), 235-249.

Munson, M.R., & McMillen, J.C. (2009). Natural mentoring and psychosocial outcomes among older youth transitioning from foster care. *Children and Youth Services Review*, *31*(1), 104-111.

Munson, M.R., & McMillen, J.C. (2008). Nonkin natural mentors in the lives of older youths in foster care. *Journal of Behavioral Health Services and Research, 35*(4), 454-468.

Munson, M.R., Smalling, S.E., Spencer, R., Scott, L.D., & Tracy, E. (2010). A steady presence in the midst of change: Nonkin natural mentors in the lives of older youth exiting foster care. *Children and Youth Services Review, 32*(4), 527-535.

National Resource Center for Youth Development (2011). Retrieved June 1st, 2012. http://www.nrcyd.ou.edu/state-pages/search.

Naccarato, T., Brophy, M., & Courtney, M.E. (2010). Employment outcomes of foster youth: The results from the Midwest Evaluation of the Adult Functioning of Foster Youth. *Children and Youth Services Review*, *32*(4), 551-559.

Naglieri, J. A., & LeBuffe, P. A. (2005). Measuring Resilience in Children. In S. Goldstein & R. Brooks (Eds.). *Handbook of Resilience (pp. 107-124)*. New York: Kluwer/Academic Publishers.

Nomura, Y., Warner, V., & Wickramaratne, P. (2001). Parents concordant for major depressive disorder and the effect of psychopathology in offspring. *Psychological Medicine*, *31*(7), 1211-1222.

O'Dougherty Wright, M., & Masten, A. S. (2005). Resilience processes in development. In Goldstein, S., & Brooks, R.B. (Eds.), *Handbook of resilience in children* (pp. 17-37). New York: Springer.

Orme, J.G., & Buehler, C. (2001) Foster family characteristics and behavioral and emotional problems of foster children: A narrative review. *Family Relations, 50* (1), 3-15.

Peck, S., Roeser, R.W., Zarrett, N.R., & Eccles, J.S. (2008). Exploring the role of extracurricular activity involvement in the educational resilience of vulnerable adolescents: Pattern and variable centered approaches. *Journal of Social Issues*, *64*, 135-156.

Pecora, P.J., Kessler, R.C., O`Brien, K., Roller White, C., Williams, J., Hiripi, E., English, D.,White, J., & Herrick, M.A. (2006). Educational and employment outcomes of adults formerly placed in foster care: Results from the Northwest Foster Care Alumni Study. *Children and Youth Services Review*, *28*, 1459-1481.

Pecora, P.J., Kessler, R.C., Williams, J., O`Brien, K., Downs, A.C., English, D., White, J., Hiripi, E., Roller White, C., Wiggins, T., & Holmes, K. (2005). *Improving family foster care: Findings from the Northwest Alumni Study*. Casey Family Programs: Seattle.

Pecora, P. J., Roller White, C., Jackson, L.J., & Wiggins, T. (2009). Mental health of current and former recipients of foster care: A review of recent studies in the USA. *Child and Family Social Work, 14*, 132-146.

Raghavan, R., & McMillen, J.C. (2008). Use of multiple psychotropic medications among adolescents aging-out of foster care. *Psychiatric Services, 59*, 1052-1055.

Raviv, T., Taussig, H.N., Culhane, S.E., & Garrido, E.F. (2010). Cumulative risk exposure and   mental health symptoms among maltreated youth placed in out of home care. *Child Abuse & Neglect, 34,* 742-751.

Regnerus, M. D. (2003). Religion and positive adolescent outcomes: A review of research and theory. *Review of Religious Research*, *44*(4), 394–413.

Regnerus, M., Smith, C., & Fritsch, M. (2003). Religion in the lives of American adolescents: A review of the literature. Chapel Hill: National Study of Youth and Religion.

Reich, J.W., Zautra, A.J., & Hall, J.S. (Eds.) (2010). *Handbook of Adult Resilience*. New York: Guildford.

Reilly, T. (2003). Transitions from care: status and outcomes of youth who age out of foster care. *Child Welfare, 82*, 727-746.

Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry, 38*, 381-389.

Robins, L., Cottler, L., Bucholz, K. & Compton, W. (1995). *Diagnostic Interview Schedule for DSM-IV*. St. Louis, MO: Washington University in St. Louis.

Rogers, R. (1995). *Diagnostic and structured interviewing: A handbook for psychologists*. Odessa: Psychological Assessment Resources, Inc.

Rosenbaum, M., & Bennett, B. (1986). Homicide and depression. *American Journal of Psychiatry*, *143*, 367-370.

Russell, D.E H. (1986). *The secret trauma: Incest in the lives of girls and women*. New York: Basic Books.

Sameroff, A. J., Bartko, W. T., Baldwin, A., Baldwin, C., & Seifer, R. (1998). Family and social influences on the development of child competence. In M. Lewis & C. Feiring (Eds.), *Families, risk, and competence* (pp. 161-185). Mahwah, NJ: Erlbaum.

Sameroff, A. J., Seifer, R., Zax, M., & Barocas, R. (1987). Early indicators of Developmental risk: The Rochester Longitudinal Study. *Schizophrenia Bulletin*, *13*, 383-393.

Samuels, G.M. & Pryce, J.M. (2008) 'What doesn't kill you makes you stronger': Survivalist self-reliance as resilience and risk among young adults aging out of foster care. *Children and Youth Services Review*, *30*(10), 1198–1210.

Scher, C.D., Stein, M.B., Asmundson, G.J.G., McCreary, D.R., & Forde, D.R. (2001). The childhood trauma questionnaire in a community sample: Psychometric properties and normative data. *Journal of Traumatic Stress*, *14*, 843–857.

Scott, T., & Gustavsson, N. (2010). Balancing permanency and stability for youth in foster care. *Children and Youth Services Review*, *32*, 619-625.

Scott, L.D., Munson, M.R., McMillen, J.C., & Ollie, M.T. (2006). Religious involvement and its associations to risk behaviors among older youth in foster care. *American Journal of Community Psychology*, *38*, 223-236.

Scott, L.D., Munson, M.R., McMillen, J.C., & Snowden, L.R. (2007). Predisposition to Seek mental health care among black males transitioning from foster care. *Children and Youth Services Review*, 29, 870-882.

Shieh, G. (2009). Detecting interaction effects in moderated multiple regression with continuous variables: Power and sample size considerations. *Organizational Research Methods, 12*(3), 510-528.

Shonk, S.M., & Cicchetti, D. (2001). Maltreatment, competency deficits, and risk for academic and behavioral maladjustment. *Developmental Psychology*, *37*(1), 3–17.

Siegel, K., & Schrimshaw, E.W. (2007). The stress moderating role of benefit finding on psychological distress and well-being among women living with HIV/AIDS. *AIDS and Behavior*, *11*, 421–433.

Simmel, C. (2012). Highlighting adolescents` involvement with the child welfare system: A review of recent trends, policy developments, and related research. *Children and YouthServices Review, 34*, 1197-1207.

Smithgall, C., Gladden, R., Howard, E., George, R., & Courtney, M. (2004). Educational experience of children in out-of-home care. Chicago: Chapin Hall Center for Children.

Snelbaker, A. J., Wilkinson, G. S., Robertson, G. J., & Glutting, J. J. (2001). Wide Range Achievement Test 3 (WRAT). In W. I. Dorfman & M. Hersen (Eds.), *Understanding psychological assessment*. New York: Kluwer Academe/Plenum Publishers.

Stott, T. (2012). Placement instability and risky behaviors of youth aging-out of foster care. *Child and Adolescent Social Work Journal, 29*, 61-83.

Sullivan, M.J., Jones, L., & Mathiesen, S. (2010). School change, academic progress, and behavior problems in a sample of foster youth. *Children and Youth Services Review*, *32*,164-170.

Tolan, P. T. (1996). How resilient is the concept of resilience? *The Community Psychologist, 29*,12–15.

Trice, A. D., & Brewster, J. (2004). The effects of maternal incarceration on adolescent children. *Journal of Police and Criminal Psychology*, *19*, 27–35.

van der Laan, A., Veenstra, R., Bogaerts, S., Verhulst, F.C., & Ormel, J. (2010). Serious, minor, and non-delinquents in early adolescence: The impact of cumulative risk and promotive factors. *Journal of Abnormal Child Psychology, 38,* 339-351.

Vandiver, T., & Sher, K.J. (1991). Temporal stability of the Diagnostic Interview Schedule. *Psychological Assessment*, *3*, 277-281.

Vaughn, M.G., Litschge, C., DeLisi, M., Beaver, K.M., & McMillen, C.J. (2008). Psychopathic personality features and risks for criminal justice system involvement among emancipating foster youth. *Children and Youth Services Review, 30*, 1101-1110.

Vaughn, M.G., Ollie, M.T., McMillen, C., Scott, L., & Munson, M. (2007). Substance use and abuse among older youth in foster care. *Addictive Behaviors*, *32,* 1929-1935.

Vaughn, M.G., Shook, J.J. & McMillen, C. (2008). Aging out of foster care and legal involvement: Toward a typology of risk. *Social Service Review 82*, 419-446.

Unrau, Y.A., Font, S. A., & Rawls, G. (2012). Readiness for college engagement among students who have aged-out of foster care. *Children and Youth Services Review, 34*, 76-83.

Urcuyo, K.R., Boyers, A.E., Carver, C.S., & Antoni, M.H. (2005). Finding benefit in breast cancer: Relations with personality, coping, and concurrent well-being. *Health Psychology*, *20*, 175–192.

U.S. Department of Education (1990). National Center for Education Statistics, National Education Longitudinal Study of 1988: First follow-up study, 1990. U.S. Department of Education, Washington: DC.

U.S. Department of Health and Human Services (2011). The AFCARS Report: Preliminary Estimate for FY 2010. Washington: D.C. Retrieved June 10, 2012 from http://www.acf.hhs.gov/programs/cb/stats_research/afcars/tar/report18.htm

Walsh, W.A., Dawson, J., & Mattingly, M.J. (2010). How are we measuring resilience Following childhood maltreatment: Is the research adequate and consistent? What is the impact on research, practice, and policy? *Trauma, Violence, & Abuse*, *11*(1), 27-41.

Wenninger, K., & Ehlers, A. (1998). Dysfunctional cognitions and adult psychological functioning in child sexual abuse survivors. *Journal of Traumatic Stress*, *11*(2), 281-300.

Werner, E.E. (1992). The children of Kauai: Resiliency and recovery in adolescence and adulthood. *Journal of Adolescent Health*, *13*, 262-268.

Werner, E.E., & Smith, R.S. (1992). *Overcoming the odds: High risk children from birth To adulthood*. Ithaca, NY: Cornell University Press.

Werner, E.E., & Smith, R.S. (1982). *Vulnerable but invincible: A study of resilient children*. New York: McGraw-Hill.

Wilbur, M.B., Marani, J.E., Appugliese, D., Woods, R., Siegal, J.A., Cabral, H.J., et al. (2007). Socioemotional effects of fathers' incarceration on low-income, urban, school-aged children. *Pediatrics*, *120*, 678–685.

Wilkinson, G. S. (1993). *The Wide Range Achievement Test: Administration manual*. Wilmington: Wide Range, Inc.

Williams, J. H., Ayers, C. D., Van Dorn, R. A., & Arthur, M. W. (2004). Risk and Protective factors in the development of delinquency and conduct disorder. In M. W. Fraser (Ed.), *Risk and Resilience in Childhood: An Ecological Perspective* (pp. 209-249). Washington, D.C: National Association of Social Workers Press.

Wolanin, T.R. (2005). *Higher education opportunities for foster youth: A primer for policy makers.* The Institute for Higher Education Policy. Retrieved December, 2010 from http://www.ihep.org/assets/files/publications/m-r/OpportunitiesFosterYouth.pdf

Yates, T.M., & Grey, I.K. (2012). Adapting to aging-out: Profiles of risk and resilience among emancipated foster youth. *Development and Psychopathology, 24*, 475-492.

Zucker, R.A., Wong, M.M., Puttler, L.I., & Fitzgerald, H.E. (2003). Resilience and vulnerability   among sons of alcoholics: Relationship to developmental outcomes between early childhood and adolescence. In In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 76-103). New York: Cambridge University Press

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Isralowitz, R., Reznik, A., & Shpiegel, S. (2010). Religious status and drug use behavior among former Soviet Union immigrants. *International Migration*, *48* (3), 174-178.

Isralowitz, R., Shpiegel, S., Reznik, A., & Layton, A. (2009). Ethiopian youth in Israel: Gender-related alcohol use and related problem behavior. *Drugs: Education, Prevention, and Policy*, 16 (3), 273-278.

Isralowitz, R., Shpiegel, S., Reznik, A., Borkin, S., & Snir, Y. (2009). Late life alcohol use and gender differences among former Soviet Union immigrants. *Journal of Ethnicity in Substance Abuse*, 8 (2), 201-205.