LONG-TERM EFFECTIVENESS OF EARLY INTERVENTION: TESTING A MEDIATOR MODEL OF ADOLESCENT RISK

by

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(Under the Direction of Lynda Henley Walters)

ABSTRACT

Research supports that adaptation in young adulthood (e.g., employment status and educational attainment) is influenced by a number of risk and protective factors which are distal (contextual and farther removed from outcomes) and proximal (individual and intermediary to outcomes). The degree to which proximal risk and protection mediates the relation between distal/contextual factors and young adult outcomes was examined among participants in a longitudinal study of minority youth who grew up in a poor urban community. Mother's reports of depression and family income (poverty), when participants were children and adolescents, served as indicators of distal risk factors, whereas reported family living situation (family structure) in childhood and adolescence was used to indicate a protective factor. School and community center assessments of intelligence in the first through third grades were indicators of proximal protection whereas mother reports of 'child adaptation' (items measuring disruptive and inattentive behavior) and school reports of first grade attendance indicated proximal risk. The integral goal of the research was to examine the role of community-based intervention in early childhood (which more than half of participants received) as it potentially moderates and changes the distal-proximal-outcome relation. A method of testing mediator and moderator

effects through multiple regression was used (cf. Baron & Kenny, 1986). Results supported neither the mediator model of distal and proximal factors as they influenced outcomes, nor a moderating influence of early intervention. These findings point to the utility of rigorous empirical tests, e.g., the Sobel (1990) test, of mediation as well as the need for systematic, goal-directed, implementation of early, community-based intervention.

INDEX WORDS:

Mediators, Moderator, Risk factors, Protective factors, Distal variable, Proximal variable, Maternal depression, Poverty, Family Structure, Intelligence, School attendance, Disruptive/Inattentive behavior, Children, Adolescents, Young adults, Early intervention, Community-based intervention, Educational attainment, Employment, Income

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CHAPTER 1

INTRODUCTION

Purpose of the Study

Prevention of adult problem behavior clearly begins early in childhood. The effectiveness of early intervention and early prevention programs has been documented for educational outcomes (Felner, Ginter, & Primavera, 1982; Ramey, Campbell, & Ramey, 1999), social competence of adolescents (Campbell & Ramey, 1995; Hansen, 1996), and social competence of adults (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Roberts, Mazzucchelli, Taylor, & Reid, 2003). Evidence for the effectiveness of early intervention and prevention programs is even stronger when we consider outcomes in middle school (Solomon, Battistich, & Watson, 1993) and high school (Barnett, 1995). Likewise, a general model for explaining adolescent risk behavior has been shown to be effective for understanding the links between early/environmental risk and protective factors (Jimerson, Egeland, Sroufe, & Carlson, 2000), current/mediating risk and protective factors (Connell, Spencer, & Aber, 1994; Small & Luster, 1994), and adolescent outcomes (Donovan, 1996).

The generally accepted model of adolescent risk represents the mediation of the effect of distal risk/protection factors on adolescent outcomes. The mediators in the model are current (proximal) risk/protective factors that are amenable to change (Caldas, 1993). The model has also been conceptualized as including a moderating variable, such as the role of protective factors as moderators of the effect of risk on outcome. Use of the model is varied, with some conceptualizing the effect of proximal risk factors on the relation between distal protective

factors and outcome and others conceptualizing the effect of proximal protective factors on the relation between risk factors (distal or proximal) and outcome. The model is consistent with life-course theory (and related theories, e.g., life-span theory, developmental contextualism see Jessor, 1992, and developmental systems theory) and with later articulations of problem behavior theory, which is, historically, the most influential of the theories of risky behavior of adolescents (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995).

The purpose of this study is to investigate the moderating effect of early comprehensive, community-based intervention on the generally accepted adolescent risk model. That is, this is not an examination of an application of the risk model. The risk model is accepted as the best way to explain the relations among risk, protection, and adolescent/adult outcomes. Instead, this is a study of the effectiveness of early intervention on expected relations among risk, protection, and adult outcome. In order to test the more complex moderator model in this study, a common risk model will be proposed and tested to confirm its usefulness in this sample. Second, a moderator model will be tested in which an early intervention program will be tested for its ability to moderate the risk model.

The Adolescent Risk Model

The risk model contains variables that have been examined before: distal risk/protective factors (poverty, family structure, and mother's depression), proximal risk/protective factors (school attendance, disruptive/inattentive behavior, intelligence), and outcomes (school completion, employment status, and income). A brief rationale for the inclusion of each variable follows.

Poverty. Poverty has been shown to have a variety of adverse effects upon child development such as cognitive deficits and externalizing behavior in early childhood (Duncan,

Brooks-Gunn, & Klebanov, 1994). Moreover, timing of poverty from early childhood through adolescence appears to have strong effects on child achievement. For example, school completion is lower for individuals who experienced poverty in early childhood (preschool and early grades) than for those who were only exposed to poverty at later times (middle grades and adolescence) (Brooks-Gunn & Duncan, 1997). Other examples of the effect of poverty include the finding that family income is negatively related to the adolescent risk behaviors of engaging in sexual intercourse and weapon-related violence (Blum, Beuhring, Shew, Bearinger, Sieving, & Resnick, 2000). Childhood poverty has also been found to have long-term negative effects in adulthood such as school dropout (Ensminger & Lamkin, 1992) as well as lowered life satisfaction and poor health (Hobcraft & Kiernan, 2001).

Mother's depression. Maternal depression, a distal risk factor or marker for process factors that are directly related to adolescent adjustment, affects child outcomes via family relationships and parent-child interactions (Davies & Windle, 1997; Nelson, Hammen, Brennan, & Ullman, 2003). Similar to poverty, maternal depression has an adverse effect on children's cognitive development (Petterson & Albers, 2001) and exacerbates their behavior problems (Elgar, Curtis, McGrath, Waschbusch, & Stewart, 2003; Zuckerman & Beardslee, 1987). The effects of maternal depression on adolescents include externalizing behaviors and impaired functioning in social and academic roles (Nelson et al., 2003). Depressive symptoms reported by mothers are associated with adolescent daughters' (but not sons') experiences with depression, behavioral problems, and academic difficulties (Davies & Windle, 1997) as well as psychological functioning and educational attainment for adult sons and daughters (Ensminger, Hanson, Riley, & Juon, 2003).

Family structure. Growing up in a single parent family is traditionally classified as a risk factor. The reason family structure is considered a risk factor is due to its association with distal risk variables such as poverty and process risk factors such as parental supervision. Among urban African-American first graders it was found that having at least two adults, as opposed to one, in their family unit, regardless of whether the second adult was the child's father, contributed positively to their performance in reading and end-of-year achievement test scores (Thompson, Alexander, & Entwisle, 1988). Adolescents from two-parent families are at significantly lower risk for engagement in high-risk behaviors (e.g., alcohol use, weapon-related violence, sexual intercourse) than their peers who resided in single-parent families (Blum et al., 2000). Also, residing in a mother-father family is a demonstrated protective factor against school dropout among urban African-American females (Ensminger & Slusarcick, 1992) whereas mother-grandmother families were shown to have nearly as strong positive contributions to children's mental health as do mother-father family types (Kellam, Ensminger, & Turner, 1977). However, a review of inconsistent findings on the relation between single parent family status and adolescent academic achievement concludes that the risk family structure poses for school failure is slight (Thiessen, 1997). Moreover, it was been found that family structure does not contribute to low socioeconomic attainment of adult minority males (Amato & Keith, 1991).

School absence. At the elementary school level, frequent school absence is a risk factor for poor educational outcomes or academic risk in the later years (Finn & Rock, 1997). School attendance is strongly related to the likelihood of high school completion (Shumer, 1993). Truancy, defined as an unexcused absence from school, is a risk factor for adolescent delinquent behavior, including substance use, gang involvement, burglary, and vandalism (Baker, Sigmon, & Nugent, 2001). Compulsory secondary school completion laws in Canada are potential

protective factors for youth that mitigate the risks of unnecessary school absences (Grover, 2002), whereas limited enforcement of attendance policies has been found to be a risk factor for poor academic performance (Shavelson, McDonnell, Oakes, & Picus, 1987).

Disruptive/inattentive behavior. Inattentive and disruptive behavior is a risk factor for academic difficulties in elementary school (Finn, Pannozzo, & Voelkl, 1995; Flanagan, Bierman, & Kam, 2003). Moreover, the combined effects of aggressiveness and hyperactivity of early adolescent males have been found to be associated with alcohol abuse and criminal behavior in early adulthood (Andersson, Magnusson, & Wennberg, 1997). In an assessment of boys' social adjustment in the third through sixth grades, who were followed up in the seventh through tenth grades, it was found that aggression accompanied by irritable-inattentive behaviors posed the greatest risk for antisocial behavior in adolescence (Pope & Bierman, 1999). Lastly, there is recent support for a strong relation between conduct disorder / hyperactivity in childhood and antisocial personality disorder in early to mid adulthood (Simonoff, Elander, Holmshaw, Pickles, Murray, & Rutter, 2004).

Intelligence. Intelligence is generally conceptualized as a protective factor because it is positively related to academic achievement and prosocial outcomes. Of particular relevance for this study, IQ is found to be significantly related to academic achievement among African-American high school students (Bellow, 2001). Possessing a high IQ also protects individuals at high risk for antisocial behavior from criminal involvement in adulthood (Kandel et al., 1988). Further attesting the power of IQ, one study of children and adolescents who grew up with the adversity of maternal psychopathology, found higher IQs and educational aspirations among those who demonstrated good social adjustment (Tiet, Bird, Hoven, Wu, Moore, & Davies, 2001).

School completion. Approximately 30% of high school students drop out in the United States (Business Roundtable, 2003) and 50% of prison inmates have less than a high school education (Cassel, 2003). Those who quit school are more likely to be dependent on government assistance, have health problems, and/or be incarcerated (Srebnik & Elias, 1993). Dropping out costs the average individual in the U.S. almost $60,000 in federal and state taxes over a lifetime (Imel, 1993). Adolescents at risk for dropping out share common risk factors (e.g., low income, minority status, aggressive behaviors in school; see Cairns, Cairns, & Neckerman, 1989) that contribute to their engaging in "educational" risk behaviors (e.g., truancy and failing grades), which, in turn, directly decrease their likelihood of educational success. Early school dropout is linked to poor academic performance (Gruber & Machamer, 2000). Early adolescent drug use, but not delinquent behavior, has been found to be predictive of school dropout (Krohn, Thornberry, Collins-Hall, & Lizotte, 1995). Likewise, school dropout is associated with increased drug use (Krohn et al., 1995) and alcoholism (Crum, Ensminger, Ro, & McCord, 1998) in adulthood.

Employment status/Income. As intelligence is expected to influence economic outcome, such is the case with educational attainment (Ceci & Williams, 1997). The lifetime average income discrepancy between high school graduates and nongraduates is $212,000 (Bronfenbrenner et al., 1996). Intelligence, educational attainment, and employment status are conceptually interrelated (Ceci & Williams, 1997). As opposed to the literature on income, research examining direct effects of childhood or adolescent risk factors on chronic unemployment in adulthood is scarce. However, one can infer, based on findings linking unemployment with mental health (Brown et al., 2004; Crum et al., 1998) and unemployment with physical health (Pohjola, 2001) problems, that the same childhood and adolescent risk

factors for psychopathology affect adult employment. For example, aggressive behavior and low IQ in first grade is affiliated with dropping out of school (Ensminger & Slusarcick, 1992) and increased risk of alcoholism (Crum et al., 1998). To add, adults identified as having alcohol use disorders in the Woodlawn sample (to be discussed) were more likely to be unemployed and have dropped out of grade school or high school than participants who did not demonstrate having problems with alcohol use (Crum et al., 1998).

Conclusion

As already indicated, the purpose of this study is to examine the moderator effect of early intervention on an adolescent risk model. The moderator variable in this study is an early comprehensive intervention program that was implemented in the 1966-1967 academic year among first graders residing in the Woodlawn Community in Chicago. Early intervention has long been considered the most effective way to modify the life trajectory of a person. This conclusion has been reached by researchers studying adults as well as researchers studying children (cf Farrington & Coid, 2003). The question here, is how important or effective is an early, comprehensive, school-based program in the context of the complex relations among protective factors, risk factors, and outcomes? To answer this question, the following questions and hypotheses are posed.

Research Questions and Hypotheses

Adolescent Risk Model

Mediator question. Do proximal risk/protective factors mediate the relation between distal risk factors and outcomes?

Hypotheses.

1.-3. The association between poverty, mother's depression, or family structure and educational completion will be significantly reduced by the combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence.

4.-6. The association between poverty, mother's depression, or family structure and employment/income status will be significantly reduced by the combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence.

Early Intervention as Moderator of the Adolescent Risk Model

Moderator-Mediator question: Are the mediator effects the same with and without early intervention?

Hypotheses.

1.-3. The effect of the combination of mediating variables on the association between poverty, mother's depression, or family structure and educational completion will be different under different intervention conditions.

4.-6. The effect of the combination of mediating variables on the association between poverty, mother's depression, or family structure and employment/income status will be different under different intervention conditions.

CHAPTER 2

REVIEW OF LITERATURE

In this review of literature the following areas will be discussed and explained: (a) the theoretical standpoint of this proposal; (b) adolescent risk behavior defined and explained by theoretical standpoint; (c) the way in which the theoretical standpoint explains the role of intervention and occurrence of resilience; (d) definition of distal and proximal risk and protective factors and implications for understanding risk behavior and role of intervention; (e) descriptions of distal risk factors that influence adolescent risk behavior and adult outcomes; (f) proximal risk and protective processes that influence adolescent risk behavior and adult outcomes; (g) outcomes that mark adaptation in young adulthood, their etiology, and the relation such outcomes have with one another; and (h) the nature and effects of early and community-based intervention on adolescent risk behavior and adult adaptation.

Theoretical Standpoint of Proposal

Developmental contextualism and ecological systems theory thoroughly encompass ecological and developmental influences as well as how early intervention modifies such influences on adolescent risk and subsequent adult adaptation. In developmental contextualism, not only is the "nature" of the individual considered, the individual is thought to be actively involved in the production of his or her own development (Lerner & Busch-Rossnagel, 1981). The individual's involvement in development can be seen at all levels of environment.

Clarification of environmental levels can be found in ecological systems theory. In ecological theory, Bronfenbrenner (1977) initially posited a model comprising four systems

within the ecology of human development. The proposed systems referred to four levels of environment: microsystem, mesosystem, exosystem, and macrosystem. Although Bronfenbrenner modified his theory in later years (cf. Bronfenbrenner, 1986), his early proposal made it easier (both then and now) to conceptualize the interaction of individuals and environment. Identification of levels of systems serves to organize influences on development that can be distinguished into those which elicit positive effects (e.g., adaptation) or negative ones (e.g., maladaptation). Ecological systems theory is a useful way to examine the sources of risk and opportunity in youth development and the transactional nature in which individuals conform to and transform their social environments (Garbarino, 1992).

The study of development in its natural ecological setting has important implications for intervention (Garbarino, 1992). The maxim, “in order to understand something, you need to attempt to alter it” reflects Bronfenbrenner’s efforts to explain youth intervention and policy through his framework (Garbarino, 1992). The microsystemic and mesosystemic environments have direct effects on child development. Such contexts offer developmental opportunities as well as risks (e.g., limited or lacking nurturance and/or relationships, see Garbarino, 1992). Cumulative risks (e.g., maternal psychopathology, poverty, limited parent education, single parent status, large family size) and inadequate protection to offset the imbalance leads to negative consequences for child development (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). Risks mentioned in the aforementioned and current research serve as microsystemic (e.g., maternal psychopathology as it affects the parent-child relationship) as well as macrosystemic (e.g., poverty, racism) indicators. Microsystemic influences reflect dyadic and triadic family relationships, particularly in the early years, and extend toward the neighborhood and community at-large in adolescence and early adulthood. Moreover, the relationship among microsystems, or

mesosystem is important in determining risk the child faces; when links between home and school, for example, are weak, a child's development is threatened (Garbarino, 1992). Community-based intervention in the school-age years aims to strengthen the connection between a child's school and family to offset risk and promote positive development.

Whereas ecological systems theory serves as a framework to organize contextual risk and protective influences on development, developmental contextualism is a useful means of conceptualizing how developmental outcomes, as influenced by contextual factors, manifest. Developmental contextualism explains the processes influencing adolescent risk behavior (Steinberg & Avenevoli, 1998), as well as impacts upon young adult adaptation. Up until about a quarter of a century ago, different types of adolescent risk behaviors were conceptualized as independent of one another and few researchers examined risk behaviors from a longitudinal, developmental perspective (Steinberg & Avenevoli, 1998). Contextual influences on adolescent problem behavior were largely ignored and causes of these behaviors were attributed primarily to individual characteristics (Steinberg & Avenevoli, 1998). In its evolution, problem behavior theory (Jessor, 1977) helped to change earlier ways of conceptualizing adolescent risk behavior toward viewing contextual factors in their contribution to adolescent risk. Problem behavior theory also posits that the variety of risky behaviors engaged in by some adolescents are interrelated and reflect a lifestyle or problem behavior syndrome. Moreover, in this theory, the development of adolescent risk behavior is viewed as an interaction between an individual and his/her context. Problem behavior stems from precursors or antecedents that are organized into contextual domains. Each domain contains risk and protective factors. The interaction between risk and protective factors in their respective domains influences risk behavior and subsequent adaptation outcomes in adulthood.

Adolescent risk behavior defined and explained by theoretical standpoint

Adolescents' partaking in risky behavior is a phenomenon provoking much study and intervention. Endemic to understanding risk behavior is elucidating its association with adolescence and relating the pathways of risk behavior to tenets of adolescent and adult development. Adolescent risk behaviors are actions adolescents partake in that have potentially dangerous consequences, both short-term and long-term, posing detriment to psychosocial, as well as physical, functioning (Jessor, 1993). Risk behaviors tend to co-occur in the lifestyles of some adolescents (Gruber & Machamer, 2000; Jessor, 1977), resulting in a risk behavior syndrome – i.e., risk behaviors are engaged in with increasing severity and variety. Associations between educational risk behavior and drug use in adolescence, as well as between educational risk and early sexual onset are widely supported by research (Gruber & Machamer, 2000).

Categories of risk behaviors that are associated with one another include: substance use and abuse or addiction; sexual activity including unprotected sex and teenage pregnancy; educational risk behavior including school drop-out, failure, and truancy; and delinquent behavior associated with criminal activity and use of violence (Dryfoos, 1990). A classification of adolescent risk behaviors as "delinquent" or "antisocial" is based on a model of psychopathology or maladaptation, denoting an inability to function adequately in the face of societal demands and/or to fulfill developmental tasks associated with adolescence and young adulthood.

Over the past two decades focus on risk behaviors in adolescence has grown and with good reason. It is estimated that about 50% of youth in the United States in the 1990s engaged in two or more risk behavior categories (defined above by Dryfoos, 1990) with an approximate 10% of adolescents engaging in all four types of risk behavior. As adolescents proceed into

young adulthood facing the tasks of career development and creating families of their own, most will invariably reap the consequences of prior behaviors in adolescence, with different expected outcomes for antisocial as opposed to prosocial adolescent behavior. For example, the choice a sexually active, pregnant female makes to raise her child potentially limits her level of education and inhibits her career development in young adulthood. The consequences of her adolescent risky sexual activity will impede her ability to contribute to society while she and her child become a temporary liability to taxpayers. To add, empirical evidence exists for long-term effects of adolescent delinquent behavior in young adulthood (Moffitt, Caspi, Harrington, & Milne, 2002), effects originally conceptualized as temporary and specific to adolescence (Moffitt, 1993).

Not only does the pervasiveness of risk behavior have deleterious effects on the lives of adolescents at the individual level in ways that compromise their physical and psychosocial development, but the reduction in life chances among a proportion of America's youth has potential far-reaching effects on society's "human capital" or contribution to society (Lerner, Ostrom, & Freel, 1997). Understanding etiological factors influencing risk behavior helps the range of those concerned, from policy makers to volunteer youth workers, how, where and when to intervene in order to reduce such negative long-term consequences for individuals and society. Intervention needs to occur at multiple contextual levels, particularly the environments and communities in which youth reside.

Role of Intervention and Resilience

Developmental contextualism not only explains the development of adolescent risk behavior – namely, the antecedent – behavior – outcome process as it occurs contextually, but sheds light on the dynamics of individual adaptation to one's environment. Adaptation manifests

as a harmonic balance among developmental domains (e.g., emotional, social, cognitive, and physical) in which individual predispositions and capabilities coalesce with environmental expectations. Developmental psychopathology is a field of study that applies basic principles of developmental contextualism to understanding how individuals come to either exhibit maladaptive patterns or adapt to life stressors. In other words, developmental psychopathology is an application of developmental contextualism to the process of maladaptation.

The driving question of inquiry in developmental psychopathology remains, “What distinguishes individuals, facing equal levels of risk, who adapt to stress (i.e., example of resilience) from those who fail to adapt?” The answer, found through both clinical observation and research, is the greater presence of protective factors occurring within the individual and at the environmental levels. Protective factors are influences that decrease the odds of youth engaging in problem behaviors and increase their chances for positive adaptation. Protective factors are opposing forces (to risk factors) which augment the likelihood of engaging in maladaptive behaviors in childhood and/or adolescence. However, the presence of protective factors buffers the negative effects of risk factors in an interactive process. Moreover, mediating or interactive effects are found between risk or protective factors at different levels of environment.

Two necessary conditions that define resilience are: exposure to risk, developmental threat or adversity, and the eventual achievement of positive developmental adaptation (Luthar, Cicchetti, & Becker, 2000). Resilience, or adaptation in the face of adversity and risk for poor outcomes, is not a label assigned to individuals, rather a transactional process between individual and contextual influences (Masten, 1994). Although normative positive youth development, characterized by minimal exposure to environmental stressors/adversity or possession of

individual disability, and resilience are clearly distinct, each is believed to undergo similar developmental processes as they are fostered by the same protective factors (Masten & Coatsworth, 1998).

Recognition of the continuity of maladaptation from childhood through adolescence is necessary if the goal is to prevent involvement in adolescent risk behavior and subsequent maladaptation in adulthood. Moreover, understanding *resilience* in adolescence and/or adulthood, an exception to the continuity of maladaptation, is important for pinpointing times and ways in which to intervene. For the category of academic risk behavior in adolescence, resilience is defined as "recovery from low performance and alienation" in school (Catterall, 1998, p. 307). An example of this is found in the work of Jimerson and colleagues (1999) in which a group of students' academic performance trajectories (in math and reading achievement) were characterized by "positive deflections" (p. 122) in measures of first grade (lower) to tenth grade (higher) academic achievement. Noteworthy protective factors explaining this group of students' success were: higher SES; enriched home environment; and parent involvement in child's schooling.

Distal and Proximal Risk Factors

Risk and protective factors are not only classified as occurring at individual (e.g., personality traits) or environmental (e.g., family and community influences) levels, but may also be categorized as distal (e.g. socioeconomic status) or proximal (e.g., intelligence) based on the immediacy of relation to adaptive outcomes. In other words, distal risk factors influence outcomes indirectly through the mediating processes of proximal risk factors. At the level of process rather than outcome, the classification of distal and proximal may also be used to refer to the way in which such factors affect the individual at a given point in time; distal factors

indirectly affect a child whereas proximal factors have direct effects on child development (Bendersky & Lewis, 1994).

Although it can be observed at one point in time, adolescent risk behavior always has a history. Pathways toward maladaptation begin early in life and are affected by both individual and contextual, distal and proximal, risk and protective factors. Distal factors are usually contextual and include demographic descriptors; because they are indirectly related to risk or adaptive outcomes, they are regarded as unalterable. Socioeconomic status (SES) is an obvious example of a distal factor. Contextual distal risk factors also include gender, race/ethnicity, and stage of development in the life course; although these factors occur within or are possessed by individuals, they arguably have an indirect influence on risk behavior and are not subject to change with intervention. Proximal factors, like distal contextual factors, may occur at both the environmental and individual levels, but are defined by a direct influence on an individual's adaptation (Capella & Weinstein, 2001). Due to the direct influence proximal factors have on outcome, they may also be labeled as process based because of their susceptibility to change and the influence of intervention (Caldas, 1993). Intelligence is an exceptional proximal protective factor in which susceptibility to change is restricted to earlier stages of development (e.g. early childhood see Campbell & Ramey, 1995) and may be considered a reflection of the context in which an individual functions. Proximal factors that involve process are currently active, e.g. parental monitoring behavior. Thus, the more active the process or proximal factor, the greater its vulnerability to intervention (i.e., change).

Distinction of distal and proximal is important due to implications for prevention and intervention with youth. Decisions need to be made about levels in which to intervene (e.g., environmental and/or individual) as well as which risk/protective factors are more immediately

related to outcomes (e.g., process and proximal risk /protective factors) and thus more responsive to change than distal risk factors (i.e., socioeconomic status is less amenable to intervention).

Notable protective factors pinpointed in resilience research (e.g., availability of community support networks, the presence of caring adults, possession of high intelligence, and having high self-esteem) have caught the attention of youth interventionists and prevention researchers. Decreasing the influence of risk factors and increasing or providing the presence of protection in the lives of at-risk youth is a main goal of prevention researchers and interventionists. There is logic in targeting those protective factors found in youth development research as part of treatment and prevention for youth at risk (Wolkow & Ferguson, 2001); however, setbacks occur due to limited knowledge of how to influence underlying processes that buffer risk and stress in the lives of youth (Rutter, 1993). Yet the bottom line is that resilience research supports the importance of youth-adult relationships and opportunities for growth and participation -- what interventionists and prevention researchers have intuitively been concerned with over the past several decades.

In addition to informing program implementation, a resilience framework that includes the role of distal and proximal risk and protective factors potentially adds to the evaluation of program effectiveness. Keeping in mind that protection and risk processes mediate the relation between distal risk factors and outcome (Connell, Spencer, & Aber, 1994), e.g., the relation of poverty to poor educational performance is mediated by home environment and parental involvement in a child's education, the goal of effective intervention is to work at the level of such mediating influences, particularly supplementing proximal protection, as they impact long-term outcomes. Evaluation designs that incorporate measures of change in mediators (e.g., proximal risk and protection), as well as long-term program goals/outcomes, employ mediator

models to explain program effectiveness (MacKinnon & Dwyer, 1993). Thus, an ideal program evaluation dataset includes measures of mediating or proximal risk/protective factors and long-term outcomes and, hence, is longitudinal. Tracking long-term outcomes for youth is important in determining which individuals demonstrate resilience or adaptation and to what degree has intervention influenced such an outcome.

Linkages Between Adolescent Risk and Young Adult Outcome

Often, developmental trajectories of behavior reflect continuity, particularly with respect to the link between childhood to adolescence, as well as adolescence to adulthood. For example, poor elementary school performance continues into adolescence, as does academic achievement (Jimerson, Egeland, & Teo, 1999). Terrie Moffitt and her colleagues (Moffitt, et al., 2002; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996) consistently found links between childhood conduct disorder, adolescent delinquency and subsequent problems in young adulthood in their longitudinal sample. Moreover, individuals with a prior history of prosocial behavior in childhood followed by delinquent behavior in adolescence, as well as some who demonstrated problematic behavior in childhood and refrained from engaging in adolescent delinquency (see Moffitt et al., 1996), demonstrated compromised coping skills (Aguilar et al., 2000), impaired mental health, substance use, and financial difficulties in young adulthood (Moffitt et al., 2002). Still, however, the latter two groups of individuals fared better in young adulthood than those who embarked on a continuous trajectory of problematic behavior.

Distal Risk Factors, Adolescent Risk Behavior and Adult Adaptation

Population descriptors commonly used to identify youth as at risk, for example, characterizing a student's family situation (e.g., SES and family structure), may be referred to as demographic distal risk factors. By some, demographic influences have been labeled distal

because their influence on outcomes is indirect (Cappella & Weinstein, 2001). Jessor and colleagues (Jessor, Turbin, & Costa, 1998) referred to these descriptive variables as disadvantage because they indicate less malleable individual circumstances. Such demographic distal risk factors are thought to have influence because of their relation to psychosocial processes (e.g., learned helplessness: individual level, parental monitoring: family level) as well as involvement in certain types of risky behavior (Gruber & Machamer, 2000; Hallfors et al., 2002; Johnson, 2000). The psychosocial processes that mediate the relation between distal risk factors and adaptive outcomes are classifiable as process factors (Caldas, 1993; Connell et al., 1994) because of their direct association with psychosocial and cognitive outcomes.

Findings on Distal Factors

Adolescents' risk behaviors are often explained by demographic risk factors that characterize their context and environments. As mentioned, because these factors are distally related to outcomes, they are usually more difficult to influence through intervention. Moreover, using such factors as a sole explanation for adolescent risk behavior and adult outcomes reduces them to "social address labels" (Bronfenbrenner, 1986) by de-emphasizing the underlying processes that accompany them. For example, among 10- to 16-year-old, at risk, urban, African American youth, strong positive relations between poor academic performance (defined by lower attendance, poor grades and test scores, and an increased number of suspensions) and distal protective and risk factors of: (a) family structure (female-headed family at greater risk), (b) family economic risk, and (c) neighborhood risk were supported (Connell, Spencer, & Aber, 1994). In this study, the individual distal risk factor, gender, was also important (males were found to be at greater risk – see also Furstenburg & Kmec, 2000). Males are also more likely to engage in other types of risky behavior, although the proportion of adolescent females is

increasing (source). Likewise, in a sample of African-American school-age youth in the Southeastern U.S., demographic distal risk factors (e.g., eligibility for free or reduced lunch, type of community where school is located, minority status, and whether residing in urban, suburban, or rural neighborhood) were found to explain a greater proportion of variance in academic performance than proximal or process factors (Caldas, 1993).

Poverty. SES has consistently been supported as a predictor of educational performance (Bryk & Thum, 1989; Caldas, 1993; Connell, Spencer, & Aber, 1994) and risk behaviors such as sexual risk taking (Lowry et al., 1996) in adolescence. A meta-analysis of studies examining the relation between academic achievement and SES, traditionally defined by parental income, education and/or occupation, revealed a weak correlation (White, 1982). In the same study, when a proximal or process family descriptor (e.g., home environment) was incorporated into the definition of SES, the relation was notably stronger. Not only can SES be considered a proxy for process variables, but there is some confusion as to how it influences outcomes; in some studies SES is treated as a protective factor and in others a risk factor. Due to such confusion and difficulty in appropriately formulating socioeconomic status, this study will primarily be concerned with the risk factor of poverty as it is defined by Brooks-Gunn and others below.

Recent trends in the declining number of children in families and an increase in years of parents' schooling would be expected to create declines in the proportion of children in the U.S. growing up in poverty (Corcoran & Chaudry, 1997). However, the increase in single parent households and the widening gap between wealthy and poor, accompanied by declines in economic growth rates, contribute to continually high rates of child poverty witnessed over the past three decades (Corcoran & Chaudry, 1997). The risk factor of poverty tends to be a temporary situation for some children, but for others, particularly African-Americans (see

Duncan, Brooks-Gunn, & Klebanov, 1994), may continue throughout the childhood years into early adulthood (Corcoran & Chaudry, 1997). Poverty is defined as having an income that fails to cover a family's basic needs for food, shelter, and clothing (Brooks-Gunn & Duncan, 1997). A family's poverty status is operationally defined by annual U.S. Census income estimates that are dependent upon the number of family members (see Duncan et al., 1994; Petterson & Albers, 2001; and Smith, Brooks-Gunn, & Klebanov, 1997).

A large body of research supports the adverse effects of growing up in a low-income household on infants, children, adolescents (Brooks-Gunn & Duncan, 1997), and even young adults. Family income and poverty status are strongly associated with cognitive achievement (Duncan & Brooks-Gunn, 2000) and behavior in early childhood, even when maternal education and family structure are controlled for (Duncan, et al., 1994). Also, family income in early childhood has demonstrated greater effects on cognitive skills over behavior and health outcomes (Petterson & Albers, 2001).

Among elementary school-age children, income was found to be a better predictor of conduct problems in school than family structure or ethnicity and was a stronger predictor of school behavioral problems for black than white children (Patterson, Kupersmidt, & Vaden, 1990). Moreover, in this same study income level strongly predicted academic achievement in elementary school (Patterson, Kupersmidt, & Vaden, 1990). In adolescence, family income has been found to be negatively related to the adolescent risk behaviors of use of weapon-related violence, engagement in sexual intercourse (Blum, et al., 2000), and teen pregnancy (Brooks-Gunn & Duncan, 1997). Growing up in poverty also produces lasting negative effects that extend into adulthood including poor physical health and reduced life satisfaction (Hobcraft & Kiernan, 2001).

Duration of time spent in poverty from early childhood through adolescence appears to have strong effects on child achievement as well. The impact of short-term poverty on children's cognitive ability, assessed by use of standardized achievement and IQ tests, was found to be significantly less than that of long-term poverty (Brooks-Gunn & Duncan, 1997; Smith, Brooks-Gunn, & Klebanov, 1997). For example, a 6-9 point difference between children's achievement test scores was found in favor of those who experienced short-term poverty as compared to their peers who grew up in continuing poverty (Smith et al., 1997). And, although the positive relation between family income and child's educational attainment across studies has been found to be small but significant, larger effects were found when examining a timing effect of income; average family income when a child is aged 0-5 has a far greater effect on number of years spent in school compared to family income measured between 5 and 10 years, or 11 and 15 years (Brooks-Gunn & Duncan, 1997).

Mother's depression. Maternal depression, at high levels, augments the risk of children's development of psychological problems (Cummings & Davies, 1994) and thus may be classified as a risk factor. However, because not all children whose mothers have major depressive disorders experience psychological difficulties (Cummings & Davies, 1994), the role of processes that potentially modify or mediate this effect (e.g., proximal protective factors) have been examined (see Davies & Windle, 1997). For example, to the extent that maternal depression affects reciprocity of mother-child relationship, i.e., produces a poor person-environment fit for the child, it may be classified as a risk factor (Garbarino & Abramowitz,). Based on support for proximal processes that mediate or moderate the main effects of maternal depression on child outcomes, maternal depression will be classified as a distal risk factor. Moreover, maternal depression, although it is amenable to intervention, fits into the distal category of risk due to the

fact that first grade intervention with Woodlawn children did not include working with mothers and improving their psychological well-being.

The effects of maternal depression on child outcome appear to be mediated by family relationship quality and parent-child interaction (Davies & Windle, 1997; Nelson, Hammen, Brennan, & Ullman, 2003). Maternal depression also plays a mediating role between poverty and child outcomes (Petterson & Albers, 2001). To add, when mothers experiencing poverty were compared to those living above poverty levels, a significantly larger proportion of those in poverty reported high levels of depression (Liaw & Brooks-Gunn, 1994). Depressed mothers' interactions with children, compared to nondepressed mothers, are found to be less organized, minimally responsive, a greater expression of negative emotions, and less engaged (Petterson & Albers, 2001). Similar to timing effects found with family income, when maternal depression is experienced for longer periods of time, versus short-term bouts, more negative developmental effects in early childhood result (Petterson & Albers, 2001).

Behavioral problems in childhood are to some degree evoked by maternal depression (Elgar, Curtis, McGrath, Waschbusch, & Stewart, 2003; Zuckerman & Beardslee, 1987). Maternal depression similarly affects adolescents' tendencies toward externalizing behaviors and social and academic difficulties (Nelson et al., 2003). Mothers' depressive symptoms are associated with adolescent daughters' depressive symptomatology, conduct problems, and difficulties in school (Davies & Windle, 1997). In young adulthood, mental health and number of years of schooling completed for adult sons and daughters was shown to be influenced by maternal depression (Ensminger, Hanson, Riley, & Juon, 2003).

Family structure. Family structure, particularly single mother status, is strongly correlated with the distal risk factor of poverty. Moreover, the effects family structure has on youth

outcomes are mediated by proximal protective factors such as parental supervision and monitoring. Some have defined family structure based on single parent family status and thus classified it as a risk factor (Thiessen, 1997). However, family structure will be conceptually defined not from a deficit model, rather presence, and that having two or more parental figures positively contribute to child outcomes. Research on school achievement outcomes in elementary school (see Thompson, Alexander, & Entwisle, 1988), for example, supports the classification of family structure as a protective factor. Moreover, one study failed to find evidence for single parent family status among minority children as a risk factor for school readiness (see Ricciuti, 1999). Others have concluded that the risk single parent family status poses for adolescent academic achievement is minimal (Thiessen, 1997) and that it does not appear to explain low socioeconomic attainment of adult minority males (Amato & Keith, 1991).

Studies that reveal the protective function of family structure include the work of Thompson (1988) and Blum (2000) and their colleagues. Thompson studied African-American first graders residing in an urban area and found that the presence of two or more parental figures in their family unit, as compared to living with a single parent, regardless of whether the second adult was the child's father, contributed positively to reading ability and scores on end-of-year achievement tests. Blum and his colleagues studied a nationally representative sample of adolescents and found that those from two-parent families, as compared with those from single parent families, were significantly less likely to be involved in health risk behaviors (alcohol use, weapon-related violence, and sexual intercourse) than their peers who resided in single-parent families. Moreover, research done with the Woodlawn sample revealed an interaction between gender and family structure as they influenced educational attainment. Residing in a mother-father family was a demonstrated protective factor against school dropout among females, but

not males, in the primarily African-American, urban Woodlawn sample (Ensminger & Slusarcick, 1992).

Other related distal risk factors: Gender and Ethnicity. Urban, low SES, African-American males have been found to be at greater risk for poor academic grade school performance (Connell et al., 1994), than urban, low SES, African-American females. Being African-American and male is also highly related to adolescents' sexual history as well as their likelihood to engage in weapon-related violence in the 7^{th} – 12^{th} grades (Blum et al., 2000; CDC, 1998). However, alcohol use is found to be less prevalent among African-American than white and Hispanic adolescents.

Proximal or Process Risk and Protective Factors

As mentioned, proximal risk factors are those with a direct influence on outcomes (Capella & Weinstein, 2001) and are considered most amenable to change/intervention. Proximal risk factors may occur in the environment as well as be defined by their relation to an individual and his or her sense of self (Connell et al., 1994). Using different terminology, Jessor and colleagues (Jessor, Turbin, & Costa, 1998) simply termed process risk factors as risks because they are more amenable to change than are disadvantages (also referred to as distal risk factors). Proximal or process risk factors directly influence academic performance and are likely to mediate the relation between distal or input risk factors and educational outcome. Proximal educational risk factors include inattentive and disruptive behavior (Finn et al., 1995; Kamps et al., 2003), disengagement from school (Finn & Rock, 1997), large class size and limited enforcement of attendance policies (Shavelson et al., 1987), and elementary school attendance patterns (Lehr, Sinclair, & Christenson, 2004).

School absence. Among elementary school students, low attendance influences academic difficulties in the later years (Finn & Rock, 1997) and, risk for dropout can be assessed as early as the third grade based on assessments of attendance records (Lehr, Sinclair, & Christenson, 2004). The likelihood of completing high school is strongly influenced by school attendance throughout one's grade school years (Shumer, 1993). Moreover, truancy in adolescence, or being absent from school without a legitimate reason, is a risk factor for engagement in behaviors characterizing delinquency such as substance use, gang involvement, burglary, and vandalism (Baker, Sigmon, & Nugent, 2001).

A main risk factor for school absenteeism is poverty (Zhang, 2003); patterns of absenteeism begin in primary school. To add, it was found in a nationally representative sample of middle and high school students (Bowen, Bowen, & Ware, 2002) that educational behavior, composed of three components: attendance; grades; and school social behavior, was explained more by neighborhood characteristics (e.g., poverty, crime & violence, lack of support) than by parenting behaviors (e.g., supportive parenting, parental support of child's education). One possible explanation for the positive relation between poverty and absenteeism is primary wage earner job instability, as father's job loss was found to negatively impact early adolescent school attendance among African-Americans (Kalil & DeLeire, 2002).

Disruptive/inattentive behavior. Aggressive/disruptive and inattentive behavior in school negatively influences academic performance in elementary school (Finn, Pannozzo, & Voelkl, 1995; Flanagan, Bierman, & Kam, 2003). Adolescents' demonstrations of aggressive behavior and hyperactivity in the classroom predict alcohol abuse and criminal behavior in early adulthood (Andersson, Magnusson, & Wennberg, 1997). It appears that the combination of aggressive and inattentive behavior produces worse outcomes for youth than the manifestation of

one. The same appears to be true in elementary school where the combination of aggression and irritable-inattentive behavior was found to be the strongest predictor of adolescent antisocial activity (Pope & Bierman, 1999). Having a lesser degree of childhood aggressive-oppositional and inattentive or hyperactive behavior differentiated sons of male alcoholics who avoided substance abuse from those who abused substances in early adolescence (Vitaro, Dobkin, Carbonneau, & Tremblay, 1996). Also, being diagnosed with hyperactivity and conduct disorder in childhood is linked to antisocial personality disorder in early adulthood (Simonoff, Elander, Holmshaw, Pickles, Murray, & Rutter, 2004).

Intelligence. In contrast to absenteeism and disruptive/inattentive behavior, intelligence is predictive of adaptive outcomes due to its positive relation to academic achievement and social adaptation. IQ, a popular means in which intelligence is measured, has a significant relation to African-American high school students' academic performance (Bellow, 2001). Intelligent youth who face a high risk of developing antisocial personality disorder and criminal activity in adulthood, are protected from such outcomes based in part on their high IQs (Kandel et al., 1988). Further, IQ also appears to serve as a protective factor for children and adolescents who grow up with depressed mothers; those who were socially adapted had higher IQs as well as higher educational aspirations (Tiet, Bird, Hoven, Wu, Moore, & Davies, 2001).

Excluding genetic explanations for the development of IQ, environmental factors that influence IQ in early childhood include: poverty, maternal mental health, parent-child interactive behaviors, maternal education, head of household occupation, minority group membership, stressful life events, family size, and family social support (Sameroff, et al., 1987). Although the greater the number of environmental factors to which a child is exposed poses greater risk for

low IQ, poverty, by far, has the greatest explanatory power for IQ score variation (Sameroff et al., 1987).

Adaptation in Young Adulthood

The outcomes of interest occur in early adulthood and are influenced both by distal, contextual risk and protection as well as mediating proximal risk and protective factors.

School completion

Estimates of dropout rates in the U.S. range from 4-7% (Young & Hoffman, 2002) to 30% (Business Roundtable, 2003). Dropping out of high school strongly predicts persistence in adulthood poverty and welfare recipiency (McLanahan, 1985). To add, the average difference between lifetime incomes of high school graduates and nongraduates is $212,000 (Bronfenbrenner, McClelland, Wethington, Moen, & Ceci, 1996).

There are three ways to conceptualize high school dropout (Ianni & Orr, 1996). One area of literature examines individual deficiencies such as intellectual deficits or personality disorders; a second focuses on the discrepancy between school and work environments; whereas a third area of study deals with what schools and other related institutions may be lacking in order to serve youth in their communities. The focus of this work will be primarily on the first and third areas of thought and their influence on achievement in grade school, and ultimately high school dropout.

Identification of students who are at risk for dropout can occur as early as third grade and is based on knowledge of their academic achievement, school behavior, and attendance (Lehr et al., 2004). Risk factors for dropping out include: poverty; minority group membership; and aggressive behaviors in school (Cairns, Cairns, & Neckerman, 1989; Murdock, 1999). Middle school students characterized by the aforementioned risk factors demonstrated less school

engagement and motivation for school success (Murdock, 1999), a finding that may explain the mechanisms leading to dropout. Residing with a single mother in adolescence is also affiliated with high school dropout, however, it appears such effects do not apply to African-American families (McLanahan, 1985). Partaking in educational risk behaviors in adolescence, e.g. truancy, (Gruber & Machamer, 2000) is a precursor for dropout whereas a notable consequence of dropout in young adulthood is unemployment (Bowen et al., 2002). Drug use in early adolescence is also a precursor to and consequence of dropping out of school (Krohn et al., 1995). Likewise, school dropout is associated with adult alcoholism (Crum, Ensminger, Ro, & McCord, 1998).

Employment status

In a review of studies exploring the links between intelligence, occupational status, and education, Ceci and Williams (1997) concluded that these three areas are highly correlated. School dropout contributes to those among the unemployed (Bowen et al., 2002) and IQ is linked to educational attainment aspirations (Tiet et al., 2001). Empirical support exists for the relation between adolescent risk behaviors (e.g., delinquency, substance use/abuse, risky sexual behaviors) and reduced economic opportunities and psychological adjustment in adulthood (Elliott, Huizinga, & Menard, 1989). For minority youth, the transition to adulthood is particularly problematic in terms of gaining employment and economic independence (Furstenberg & Kmec, 2000). Furstenberg and his colleague (2000) found in their longitudinal study of youth in Philadelphia that, in spite of similarities between minority and majority youth in educational attainment, black and Hispanic males fared considerably worse in their transition to adulthood, whereas minority and majority females were equally successful. In other words, minority males were less able to use the educational attainment gained to their advantage in

pursuing higher education and/or work experience. This finding was partially explained by academic performance in adolescence, measured by middle/high school grades and academic track, a significant predictor of whether minority men were off track in early adulthood.

Research findings on childhood risk factors for chronic unemployment in adulthood are limited. In light of findings linking unemployment with poor mental health (Brown et al., 2004; Crum et al., 1998) and physical illness (Pohjola, 2001) and that a similar subset of childhood risk factors influence mental and physical health outcomes, one can conclude that poverty, maternal depression, aggressive and inattentive behavior, and intelligence may explain unemployment in adulthood. Aggressive behavior and low IQ in early elementary school predicts dropping out in later grades (Ensminger & Slusarcick, 1992). Dropouts are subsequently less likely to be employed (Campbell, 2004) and have a number of other affiliated problems such as alcoholism (Crum et al., 1998).

Intervention

Intervention is an act of disturbing processes and behaviors in order to improve them according to an accepted standard (e.g., a youth developmental perspective of enhancing positive gains for youth). The proposed research is focused on intervention occurring at the individual, family, and school levels. In this context, individuals are the primary target audience for intervention to facilitate adaptation in adulthood. Families and schools are relevant contexts and environments for intervention to take place, but outcomes (e.g., high school graduation, gainful employment, and avoidance of substance abuse) are conceptualized as individual. However, intervention cannot be fully understood by considering persons, families, and schools independently. Instead it is useful to combine understanding of the individual in context in order to conceptualize appropriate and effective intervention.

Intervention works conceptually in three ways: (a) to buffer the negative effects of demographic risk factors, (b) to reduce the influence of process risk factors on adult outcomes, and (c) to work directly on the maladaptive behaviors themselves. Interventions designed to buffer or reduce the influence of contextual distal risk factors is essentially primary prevention whereas those designed to ameliorate the effects of proximal process risk factors may be classified as secondary prevention. For intervention at the level of maladaptive behaviors, or tertiary prevention, targets are selected based on their engagement in specific behaviors whereas targets for primary prevention are selected based on their at-risk status. Intervention programs can be designed either to prevent or to interrupt risk. Arguably, buffering the effects of distal risk factors along with working directly on maladaptive behavior provides the most comprehensive intervention. Based on the premise that "an ounce of prevention is worth a pound of cure," outcomes for intervention at the antecedent demographic risk factor level (i.e., Early Head Start) may prove most promising. For example, lasting effects of preschool level learning initiatives with at-risk children were demonstrated when students reached middle school (Campbell & Ramey, 1995) and were followed up in adulthood (Campbell et al., 2002).

Several assumptions support the conclusion that early intervention (as opposed to later) has greater impact on youth development – two of which are relevant to the following proposal. First, intervention at the point of early involvement, or prior to the emergence of opportunities for involvement (primary prevention), is considered most effective in avoiding engagement in adolescent risk behaviors (Gruber & Machamer, 2000; Jessor, 1998; Kandel, 2002). Second, an axiom of the theory of developmental contextualism predicts that developmental plasticity decreases with age (Lerner, 1996), therefore, the earlier the intervention, the stronger and more lasting the effect. Early intervention is here defined based on where one is developmentally in

terms of life stage (e.g., early childhood), rather than the development of a given behavior per se. However, oftentimes early intervention and primary prevention programs are one and the same because a pervasive pattern of problem behavior is usually not evident in early childhood. It is often assumed that later childhood and early adolescence are times in which antisocial behavior becomes problematic and, once such patterns are established, greater intensity of intervention is needed. The term primary prevention, is defined as "an intervention designed specifically to reduce the future incidence of adjustment problems" (Durlak & Wells, 1997, p. 120).

Three proposed reasons for the effectiveness of extended educational intervention in the early grades include: (a) longer time for intervention produces change that lasts longer; (b) a stable learning environment is maintained over time; and (c) the "transition to formal schooling in Kindergarten and first grade is a sensitive if not 'critical' period in children's scholastic development" (Reynolds & Temple, 1998, p. 232). The success of academic intervention in the early grades (e.g., first grade) may be explained by the third reason for effectiveness, namely that it takes place during a critical point in the young student's social role transition (Entwisle & Alexander, 1993). A sensitive period is an optimal time in which organisms are particularly responsive to environmental input in order for critical capacities to be developed (e.g., literacy learning).

Evidence of effective early intervention against dropout

There is strong support for the effectiveness of preschool intervention for school achievement in early adolescence (e.g., Campbell & Ramey, 1995; Reynolds & Temple, 1998). However, the noted effectiveness of the Chicago Child-Parent Center and Expansion Program (Reynolds & Temple, 1998) may have been a result of the amount of time it was implemented (from preschool through third grade). It is difficult to determine which points in time (i.e. Pre-K,

Kindergarten, first, second, or third grade) contributed most to this program's effectiveness, defined by continuity in academic achievement through the seventh grade. Most likely, continued positive academic performance stemmed from the cumulative effects of intervention over time, similar to the "natural" pattern of continuity of poor academic performance. Moreover, lasting positive effects of the early elementary school years (1st through 3rd grade) have been found on later school years (Entwisle & Hayduk, 1988), effects that are attributed to parent involvement and teachers' high expectations of students.

Evidence of long-term effectiveness of early intervention and primary prevention for building of cognitive and social skills among youth has implications for adolescent risk behavior. Namely, positive gains attributed to youth programs are negatively related to adolescent risk behavior. Studies involving at-risk infants and preschoolers are shown to positively influence cognitive performance (Burchinal, et al., 1997) and social-emotional competence and positive coping skills, while preventing antisocial and aggressive behavior (Lynch, Geller, & Schmidt, 2004) in middle childhood. Early childhood intervention positively contributes to cognitive skills and academic achievement through early adolescence (Barnett, 1995; Campbell & Ramey, 1995) and young adulthood (Campbell, et al., 2002). In terms of primary prevention, a meta-analysis of 177 preventive youth mental health programs, including a large portion of community-based programs, revealed decent effect sizes favoring positive social and behavioral adaptation among children and adolescents (Durlak & Wells, 1997).

Community-based intervention and adolescent risk

A community is defined by location and is composed of functional social systems affected by a common government (Wagner, Swenson, & Henggeler, 2000). A target population for community-based intervention resides within a given locale and intervention may occur at

one or more community levels (e.g. individual, family or school – see Wagner et al., 2000). The theoretical thrust of community-based intervention emerged in the late 1970s in line with Bronfenbrenner's (1977) ecological-contextual approach (Wagner et al., 2000). At that time the community became recognized as a viable force in which individuals are nested. Moreover, community-based intervention was recognized as an effective means of ameliorating problems among children and adolescents (Wagner et al., 2000).

Participants' attitudes (e.g., positive or negative) toward the community institutions that serve them (e.g., schools) are strong determinants for how well they respond to intervention and how likely they are to desist from maladaptive behaviors. For example, interventions that promote school engagement, a notable proximal protective factor against academic failure (Finn & Rock, 1997), have shown to be effective for increasing and/or maintaining academic performance in the early grades. Community-based intervention that connects contexts in which youth reside, for example, providing comprehensive services from schools, community centers, and community mental health providers are considered an effective dropout prevention measure (Ianni & Orr, 1996). Moreover, community resources (e.g., higher quality schools) have been shown to contribute to less positive attitudes toward engagement in adolescent risk behavior and a reduction in aggressive acts (Kowaleski-Jones, 2000).

A popular approach to promoting positive youth development and reducing risk behaviors among adolescents in a given target population is through use of community-based programs/interventions (see Eccles & Gootman, 2002). Theoretically based models for interventions aimed to reduce adolescent problem behaviors include the prevention and positive youth development approaches (Small & Memmo, 2004). Models specific to community-based interventions for adolescent risk and problem behaviors include the ecological model and

developmental framework (Browne et al., 2001). The latter is not to be mistaken for the positive youth development framework as the emphasis is on the etiological development of risk behaviors, not global principles and stages of human development characterizing the positive youth development approach. Combining the ecological approach with the etiological developmental framework posits that adolescent risk behavior develops within an ecological context. Both models acknowledge that “adolescents are active participants in their own development” (Browne et al., 2001, p. 218). Therefore, the theoretical approaches or models of adolescent risk intervention justify the assessment of individual attributes in evaluations of community-based programs (Browne et al., 2001).

Effective programs resulting in reduction of involvement in adolescent risk behavior work through influence on protective factors (Browne et al., 2001) or proximal processes, particularly those that bolster protective factors (Roth et al., 1998). Such programs are likely to be implemented in late childhood and early adolescence, an emergent sensitive period for risk involvement. An optimal time to target adolescent risk behavior appears to be prior to middle school (Browne et al., 2001). As mentioned, primary prevention of adolescent risk behavior is defined not by the life stage in which it is instituted (usually late childhood or early adolescence), rather by point of involvement in a given risk behavior. Effectiveness of preventive programs for adolescent risk (e.g. All-STARS Character Education Program) has been demonstrated (Hansen, et al., 1991). Less is known, however, about the potential buffering effects of early intervention (defined by life stage, e.g., early childhood) on adolescent risk behaviors and related positive outcomes.

CHAPTER 3

METHODS

To investigate the questions proposed for this study, a moderator model of context, intervention, and outcome will be examined. The moderator will be intervention (as explained subsequently). Context variables that measure risk status are poverty (defined by US Census formulas and data from 1966 and 1975 when Woodlawn data were collected), family structure, and parental psychopathology in the form of maternal depression. Individual variables are absenteeism, disruptive and/or inattentive behavior, and intelligence. Outcomes measured in adulthood are educational attainment, occupation and income. Proximal individual variables will be treated as mediators in the model. The degree to which distal/contextual factors are mediated by proximal/individual factors in relation to adult outcomes will be examined. Most important, the effects of first grade community-based intervention on the model, administered to over half the sample with the remaining portion serving as comparison controls, will be examined.

The following section includes descriptions of participants from whom data were collected and the characteristics and theoretical approach of the intervention experienced by participants. Second, research findings on the relations among three classifications of variables in this study are briefly summarized, namely: (a) distal contextual risk and protective factors; (b) proximal individual risk and protective factors; and (c) outcome variables of adult adaptation, are outlined. Last, operational definitions of variables and hypotheses for the relations among them are presented.

Participants

Data were obtained from an epidemiological mental health, longitudinal study conducted by Sheppard Kellam, Margaret Ensminger, and Jeannette Branch starting in the early 1960s in the Woodlawn community in South Side Chicago. A collaboration between the City of Chicago, Woodlawn's residents, and mental health professionals founded the Woodlawn Community Mental Health Center in 1963 (Ensminger, Lamkin, & Jacobson, 1996) which provided impetus for the study and intervention efforts (to be described). Data were collected from four consecutive cohorts, of which the third cohort (1966-1967 academic year) was selected for longitudinal follow-up. This cohort has the most complete data and is the sample upon which analyses are based. (See Table 3.1 for sample characteristics.) Data collection is ongoing for this longitudinal study of individuals followed into adulthood. The third cohort consisted of 1,242 first graders residing in Woodlawn. At the time of initial data collection, the majority (99%) of Woodlawn respondents were African-American (Ensminger & Slusarcick, 1992). Of the selected Woodlawn residents who had first grade children in the 1966-1967 academic year only thirteen families refused to participate in the initial interviews (Ensminger, Juon, & Fothergill, 2002). A total of eighty-four guardians and 1,158 mothers were interviewed in 1967 (Ensminger, 1995).

Due to concern about Woodlawn's youth, the community collaborated with the newly established Woodlawn Mental Health Center in 1963 to begin an epidemiological project involving community-based intervention and follow-up (Ensminger, Lamkin, & Jacobson, 1996). At time one of data collection, the children attended one of nine public and three parochial schools, with a total of 57 classrooms (Ensminger, 1995). Half the elementary schools were assigned to intervention conditions (to be described) and the other six schools served as

Table 3.1 Description of Woodlawn Epidemiological Study Participants (*N*=846)

	n	%	*M*/Median	*SD*
Sex				
Male	425	50.2		
Female	421	49.8		
Race				
African-American	840	99.5		
Puerto Rican-American	3	.4		
White	1	.1		
Intervention Elementary School Status (T1)				
Control	368	43.5		
Experimental	478	56.5		
Parental Satisfaction with Woodlawn Neighborhood Safety (T1)				
Very Satisfied	35	4.2		
Somewhat Satisfied	162	19.4		
Somewhat Satisfied	182	21.7		
Very Dissatisfied	458	54.7		
How far adolescent (T2) would like to go in school				
Some High School	42	6.6		
Finish High School	185	29.2		
Some College	140	22.1		
Finish College	190	30.0		
Beyond College	76	12.0		
Educational Attainment Age 32 (T3)				
Some Grade School	8	1.2		
High School Dropout	133	19.1		
GED	51	7.3		
HS Graduate	133	19.1		
Some College	262	37.7		
College Degree	108	15.5		
Working or Not Age 32 (T3)				
Not Working	257	37.0		
Working or Temp Not	438	63.0		
Age T1 (mean)			6.75	.51
Age T2 (mean)			14.71	.44
Income at Age 32 (T3) (median)			$ 15,000 - $ 17,499	

controls. In the first wave of data collection, teachers and parents or guardians (primarily mothers) assessed child's classroom and home adaptation, respectively.

In the 1960s through 1970, the Woodlawn neighborhood was characterized as an overcrowded, urban, inner city environment that is primarily African-American (97% - see Ensminger & Slusarcick, 1992). During this decade Woodlawn had a high unemployment rate and larger proportion of families living in poverty, compared to the city of Chicago as a whole (22.8% versus 10.6% - see Ensminger & Slusarcick, 1992). To add, a 1970 assessment of Chicago's 76 neighborhood communities ranked Woodlawn, according to proportion of prevalence, as eighth highest in families living below poverty level, fifth highest in receipt of government aid (23.2% of Woodlawn families vs. 7.4% of the City of Chicago as a whole – see Ensminger, 1995), and highest in juvenile delinquency among males (Ensminger, Anthony, & McCord, 1997). Moreover, inner-city Chicago in the late 1960s was characterized by political unrest of the Civil Rights Movement and, particularly among the youth of Woodlawn, frequent gang activity (Ensminger & Slusarcick, 1992). It must be noted, however, that at the second follow-up of data collection in 1975, about two-thirds of the re-interviewed children/adolescents had moved out of the Woodlawn community (Ensminger, Lamkin, & Jacobson, 1996).

The second wave of data collection took place in the 1975-1976 academic year when participants were adolescents (mean age = 14.7 years). A total of 882 of the mothers and 57 guardians were re-interviewed. Of those not re-interviewed, 11% (127) were not located, 6.6% (76) had left the Chicago area, and 6% (70) refused a second interview (see Ensminger, 1995 and Ensminger & Slusarcick, 1992). A small portion of families (46 cases) had experienced a change from time one to time two; mothers who were primary caretakers in 1967 were no longer in 1976 primarily due to death; a total of 836 mothers were interviewed in both 1967 and 1976

(Ensminger, 1995). When re-interviewed mothers were compared to those who were not followed up at time two, it was found that mothers who did not participate at time two were more likely to have borne children as teenagers, reported themselves as more mobile in the time surrounding their first interviews, and had children more likely to be attending a parochial school in the first grade; no differences were found between re-interviewed mothers and those who did not interview at the second wave of data collection in terms of self-reports of depression, anxiety, income, and welfare recipiency (Ensminger, 1995; Ensminger & Slusarcick, 1992).

Three-quarters of the adolescents (n = 705) whose mothers were re-interviewed participated in the adolescent follow-up (Kellam, Branch, Brown, & Russell, 1981) and those who were re-interviewed were not significantly different from adolescents who did not participate in follow-up at time two in terms of first grade teachers' and mothers' ratings of adaptation at time one (Ensminger & Slusarcick, 1992). Furthermore, among adolescent offspring of mothers who participated, versus those whose mothers participated but they themselves did not participate (n = 302 of which 5 were deceased at Time 2; see Crum et al., 1998), no differences were found between mothers' assessments of their teenagers' psychological functioning and social adaptation (Ensminger & Slusarcick, 1992) with the exception of immaturity (adolescents who participated were rated by mothers as more mature).

Adolescents who were re-interviewed at time two were given questionnaires concerning their psychological well-being and social adaptational status including drug/alcohol use, delinquency, perceived family, peer and school functioning, and sexual activity. They were also asked whether they were interested in participating a community-based intervention to which 96% of the adolescents responded. Over half (56%) of the 682 who responded were willing to contact or be contacted about participation. Subsequently, one-quarter of the females and one-

fifth of the males came for treatment (slightly more than 80 adolescents) (Kellam, et al., 1981). Data from the first two waves of data collection were obtained from the archives of the Murray Research Center, Radcliffe Institute for Advanced Study at Harvard University.

Data from the third wave of data collection, to be discussed, were obtained directly from Dr. Margaret Ensminger, Associate Professor, Department of Health Policy and Management, School of Hygiene and Public Health at Johns Hopkins University. Participants were aged 31-34 during the third wave of data collection that took place between 1992 and 1994. Of those who were located and found to be mentally capable (953 participants with 204 not located), 39 refused participation and 44 had died (Ensminger et al., 1997, Ensminger, Juon, & Fothergill, 2002; Neilsen, Juon, & Ensminger, 2004). To add, 84% of those on whom data had been collected between the ages of 6 and 18 were located and 96% of those located who were mentally capable were re-interviewed in the third wave of data collection (Ensminger, et al., 1997).

A small portion (4%) of those re-interviewed for the third wave of data collection were in jail or prison and nearly two-thirds of respondents reported being employed (Ensminger et al., 1997). Nearly four-fifths of respondents had completed high school with less than one fifth (16%) having a college degree. Nearly a third of respondents (30%) reported having an annual household income of less than $10,000, whereas one-tenth of respondents reported an annual household income above $50,000. The remaining sixty percent of respondents fell between an annual household income of $10,000 and $50,000 (Ensminger et al., 1997). Participants who participated in interviews when they were adolescents were in families that had slightly higher family incomes and were more likely to have been living with both parents when they were in first grade (1966-1967) (Ensminger et al., 2003).

Background: The Woodlawn Community Mental Health Longitudinal Epidemiological Project – First Grade Intervention

In the formative years of prevention research from the 1950s through the 1970s, the approach was largely atheoretical (Catalano, et al., 2002). However, in the case of the Woodlawn Mental Health Epidemiological Project, life course social field theory © (Kellam, 1970), was the guiding theoretical approach for research and intervention. The elementary school intervention that over half of Woodlawn's third cohort participated in was based on levels of community intervention corresponding to the concept of the life course social field. Intervention guided by the life course social field aims to interlink relevant contexts that influence youth. This perspective guides the selection and location of youth for intervention within a community context (Kellam et al., 1975) as well as the nature of program implementation within selected environments. For example, the intervention for Woodlawn's third cohort of first graders took place in the school setting and involved the input of parents, educators, community board members, and providers of psychological services. Moreover, connecting a variety of community influences on youth is characteristic of effective programs for dropout prevention (Ianni & Orr, 1996).

Life course social field, similar to other stage-based theories of Erikson and Havighurst, considers development as a discontinuous process. In the theory, emergent life expectations occur at different points in one's life course (e.g., commitment to a career). Such developmental tasks call for individuals to adjust to societal expectations and achieve developmental tasks. Successful development in stage based theories, including life course social field theory, is marked by a balance between a person's internal state of well-being and his/her external surroundings. Two major concepts in life course social field theory, psychological well-being

(PWB) and social adaptational status (SAS) refer to one's internal adjustment and fit within larger societal context, respectively. The success of a life course social field-based intervention depends upon recipients' fulfillment of relevant adult responsibilities and tasks. In the case of the Woodlawn participants, social adaptational success is hard earned and needs to occur in spite of environmental stressors and demands. For example, avoiding high school dropout and other related adolescent problem behaviors that compromise success in adulthood while seeing a college education and/or gainful employment indicates a successful external outcome (SAS), whereas demonstrating healthy coping skills in the face of task-related stresses (e.g., college or job application process) exemplifies psychological well-being.

The Woodlawn Intervention: Elementary School

The elementary school intervention was piloted on the first two cohorts and revised for the third (1966-1967 academic year) cohort. Woodlawn Community youth attended 12 elementary Schools that were matched based on (a) number of first grade classrooms and of first grade students (b) frequency rates of maladaptation among first graders, (c) number of parochial and public schools, (d) number of large and small schools based on number of first grade classrooms, and (e) proportion of low SES families served by the school (Kellam et al., 1975). After matching, a coin was flipped to determine which set would serve as the experimental schools. Intervention was piloted in the first and second cohorts. By the time data were collected from the third cohort, intervention involved all students in the classroom and was based on a community-wide approach in which three levels of community were linked: (a) community-based intervention; (b) outpatient care; and (c) hospital or institutional care. The intervention included psychiatrist visits to classrooms, school-facilitated parent discussions with psychiatrists, parent-teacher interaction, and liaisons between the Woodlawn Community Board of Directors

and elementary school teachers of the Woodlawn children. One aspect of the intervention involved encouraging children to problem-solve and express feelings (Kellam et al., 1975). Children were evaluated between the first and third grades on measures of IQ, school readiness, achievement tests, and two psychological constructs of psychological well-being (PWB), and internal measure of psychological functioning, and social adaptational status (SAS), a social-psychological measure of functioning. Social adaptational status assessments were obtained from both teachers and mothers. It was measured by teacher report (in first and third grades) in the Teacher Observation of Child's Adaptation (TOCA) that includes questions regarding social, psychological and academic functioning of children and by mother report in the Mother Observation of Child Adaptation (MOCA) given to mothers when children were in first grade and when they were adolescents.

Differences in outcome measures by intervention category, by individual school, and by type of school were examined and are reported in Table 3.2. No significant differences were found by any of these categorizations of schools.

The Woodlawn Intervention: Conceptual Considerations

To note, the life course social field prompted intervention toward working with both family and classroom contexts, i.e., important social fields in which to locate and work with children (Kellam et al., 1975). Specific goals for the intervention were to improve children's psychological well-being and social adaptational status. Possible social adaptational status goals for the intervention can be assumed from the SAS measures given Woodlawn's third cohort in adulthood. Goals that are relevant to this study are educational attainment and gainful employment.

Table 3.2 Means for Schools Individually, for Type of School, and for Intervention Category on Outcome Measures

	Educational Completion	Work/Income Status
Schools Individually*		
School 1	3.42	.1119
School 2	3.50	.0065
School 3	3.19	.1852
School 4	3.00	.0925
School 5	2.73	-.1074
School 6	3.00	-.1601
School 7	2.85	-.0439
School 8	3.45	.2479
School 9	3.65	.3621
School 10	3.79	.0261
School 11	4.00	.4276
School 12	3.00	-.2722
Public Versus Parochial		
Public	3.19	.0713
Parochial	3.75	.0551
Intervention Category		
Intervention	3.21	.0397
Control	3.18	-.0054

* No significant differences in outcomes were found by schools (12) or type of school (public or parochial)

Procedure

An initial total of 1242 participants had data collected on them at time one; this number was reduced to 942 at time two (age 16) and 870 at time three (age 32) of data collection. (Refer to prior information on sample and data collection process.) Because there was missing data on measures of intervention and the important distal risk factor of poverty (measured by family income) in at least one time of measurement, the sample size was reduced to 846.

Characteristics of Final Sample

The final sample of 846 was 99.5% African-American, .4% Puerto Rican (3 participants), and .1% white (1 participant). Percentage African-American, percentage at poverty T1 & T2 - income at T3, average age T1, T2 % working % intervention % control. Relatively equal numbers of each sex were represented (49.8% female and 50.2% male). In over half the sample, family income was reported to beabove poverty in 1966 (55.9%) and in 1974 (52.7%). Over half of families in 1966 had reported extreme dissatisfaction with safety in the Woodlawn neighborhood (54.7%), but nearly three-fourths of families reported satisfaction with the Woodlawn schools (73.9%). Of the participants in the study, 56.5% (475) received first grade intervention; 43.5% (360) were in schools that did not receive intervention. There were no differences in elementary schools in terms of outcome variables (educational completion or work/income status (see Table 3.2).

Adult characteristics. Only 1.2% of the sample reported having only a grade school education whereas an additional 19.1% were reported as high school dropouts. About seven percent (7.3%) of participants had received a GED and another 19.1% reported having graduated high school and received their diploma. Over a third of the sample (37.7%) reported having

attended some college and over fifteen percent (15.5%) had earned a college degree. Mean income of participants in 1991, calculated from ranges rounded to nearest thousandth, was $22,999 and nearly two-thirds (63%) reported themselves as working or temporarily not working versus 37% not working. In 1991, forty-four percent (44%) reported themselves as never married, 35.9% as married or living with a partner, 19.4% as separated or divorced and .7% as widowed. Last, only a small portion of the sample (13.8%) was classified as having an alcohol use disorder.

Operational Definitions

Measures

Early Intervention. Early intervention took place over the course of the 1966-1967 academic year in which study participants were in the first grade and was a dummy coded variable. A value of 0 signified that the Woodlawn study participant had attended one of six "control" elementary schools whereas a value of "1" was assigned to all in the sample who had attended one of six "intervention" elementary schools. When interaction terms were tested, intervention participants were assigned a value of 2 and controls were given a value of 1. Six individuals who had missing data were eliminated from the analysis. (See Table 3.3 for a specification of times of data collection and measures used and see Table 3.4 for means and standard deviations among total sample, experimental, and control groups on all measures.)

Poverty. Family income was measured at two times. Time one of data collection occurred in 1967 (measuring 1966 total family income) and time two of data collection took place in 1975 (measuring 1974 total family income). Data were reported in incremental ranges of $1,000. Participants who were categorized within a range were given the middle value in the range

Table 3.3 Times Data Collected on Woodlawn Youth's Third Cohort by Measures Used

	Time of Data Collection		
	Childhood (1st Grade: 1966-1967)	**Adolescence** (1975)	**Young Adult** (1992)
	Mean Age=6.75 years	Mean Age=14.71 years	Mode Age=32 years
Distal Variables	(Parent/Mother/Guardian Report)	(Mother/Guardian Report)	
Poverty	1966 Total Family Income	1974 Total Family Income	
Mom's Depression	1-item measure: Sad & Blue	1-item measure: Sad & Blue	
Family Structure	1-item measure: Family Type	1-item measure: Family Type	
Proximal Variables			
IQ (1st and/or 3rd grade)	Kuhlmann-Anderson IQ (Elementary School or Woodlawn Mental Health Center Report)		
Disr./Inattentive Behav.	Mother Observation Child Adapt. Four Items Measuring: Restlessness, Working to Potential, Aggressiveness, and Maturity	Mother Observation Child Adaptation (Form F)	
Absence/Attendance	First Grade Attendance (Elementary School Records)		
Intervention			
Elementary School Int.	Control or Experimental Elementary School (1st Grade)		
Outcome Variables			
Educational Attainment			Chicago City Public School Records (1982) + Self Report in 1992
Employment/Income Status			Self Report 1991 income Self Report work status of whether: working or not, temporarily not working, working part time, or working full time.

Table 3.4 Data (Distal, Proximal, and Outcome Measures) on Woodlawn Epidemiological Study Participants

Total Sample (N=846)	*n*	%	*M*/Median	*Range*	*SD*
Poverty					
Above (Poverty Threshold Value 1.0+)	512	60.5			
Below (Poverty Threshold Value <1.0)	334	39.5			
Mom's Depression (1-4 scale)	(845)		1.76/1.50	1.0-4.0	.655
Family Structure			2.11/2.00	1.0-3.0	.809
Guardian/Single Parent T1 and T2	235	27.8			
Guardian/Single Parent T1 *or* T2	283	33.5			
Two or More Adults T1 and T2	328	38.8			
IQ	(724)		97.05/97.00	60-129	11.44
Disruptive/Inattentive Behavior (Standardized)	(836)		.00/-.09	-.75-2.76	.532
School Absence (days)	(797)		13.7/9.0	0-82	13.65
Educational Attainment					
High School Graduate	613	74.8			
High School Dropout	206	25.2			
Employment/Income Status					
Not Working/Temporarily Not Working	267	38.4			
Working	428	61.6			
1991 Income					
<$1,000	46	7.2			
$1,000-$9,999	157	24.5			
$10,000-$24,999	207	32.2			
$25,000-$49,999	159	24.7			
$50,000-$74,999	54	8.4			
>$75,000	19	2.9			

Control Group (N=368)	*n*	%	*M*/Median	*Range*	*SD*
Poverty					
Above (Poverty Threshold Value 1.0+)	138	37.5			
Below (Poverty Threshold Value <1.0)	230	62.5			
Mom's Depression (1-4 scale)	(367)		1.77/1.50	1.0-4.0	.669
Family Structure			2.13/2.00	1.0-3.0	.833
Guardian/Single Parent T1 and T2	106	28.8			
Guardian/Single Parent T1 *or* T2	107	29.1			
Two or More Adults T1 and T2	155	42.1			
IQ	(325)		97.67/98.00	63.0-125.0	11.18
Disruptive/Inattentive Behavior (Standardized)	(365)		-.01/-.10	-.75-2.04	.523
School Absence (days)	(341)		15.99/12.00	1.0-82.0	14.99
Educational Attainment					
High School Graduate	273	76.7			
High School Dropout	83	22.6			
Employment/Income Status					
Not Working/Temporarily Not Working	116	37.8			
Working	191	62.2			
1991 Income					
<$1,000	21	7.4			
$1,000-$9,999	74	26.0			
$10,000-$24,999	91	32.0			
$25,000-$49,999	66	23.2			
$50,000-$74,999	24	8.5			
>$75,000	8	2.8			

Table 3.4. Continued. Data (Distal, Proximal, and Outcome) on Woodlawn Epidemiological Study Participants, cont

Experimental Group (N=478)	*n*	%	*M*/Median	*Range*	*SD*
Poverty					
Above (Poverty Threshold Value 1.0+)	278	58.2			
Below (Poverty Threshold Value <1.0)	200	41.8			
Mom's Depression (1-4 scale)	(478)		1.75/1.50	1.0-4.0	.645
Family Structure			2.09-/2.00	1.0-3.0	.790
Guardian/Single Parent T1 and T2	129	27.0			
Guardian/Single Parent T1 *or* T2	176	36.8			
Two or More Adults T1 and T2	173	36.2			
IQ	(399)		96.55/96.00	60.0-129.0	11.63
Disruptive/Inattentive Behavior (Standardized)	(471)		.00/-.09	-.75-2.76	.539
School Absence (days)	(456)		11.99/8.00	0.0-72.0	12.30
Educational Attainment					
High School Graduate	340	73.4			
High School Dropout	123	26.6			
Employment/Income Status					
Not Working/Temporarily Not Working	151	38.9			
Working	237	61.1			
1991 Income					
<$1,000	25	6.9			
$1,000-$9,999	83	23.0			
$10,000-$24,999	116	32.2			
$25,000-$49,999	93	25.8			
$50,000-$74,999	32	8.9			
>$75,000	11	3.1			

(e.g., a 2,000 – 2,999 range in 1966-67 was recoded to 2,500) and then compared to U.S. Census Bureau data for 1966 and 1974 poverty estimates. Weighted average poverty thresholds for 1966 and 1974, reported by the U.S. Census Bureau for families of 2, 3, 4, 5, 6 and 7 or more members (6 total thresholds), were assigned to each study participant's family according to parent reports of how many family members were present in the household in 1966 and 1974, respectively. Income was then divided by the poverty threshold index for that particular year (provided by U.S. Census data), while accounting for how many family members were reported to reside in the same household.

Calculating an income-to-needs ratio is a common means of measuring poverty (see Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998). A traditional definition of the income-to-needs ratio has been that values below 1.0 indicate poverty whereas families that receive values of 1.0 or above qualify as above poverty. Others have used 1.5 as a criterion for poverty (Klebanov et al., 1998). Because a ratio variable is preferable to a dummy coded variable (e.g., poverty = 1, above poverty = 0), income-to-needs ratios were averaged across both time points. Lower income-to-needs ratios indicated a continuum of poverty in which lower average values are associated with living below poverty at both times and higher values as living above poverty during one or both times of data collection. Averaging poverty (income-to-needs) ratios across time can be considered a reasonable indicator of a youth's experience of poverty from age 6 to 16 based on the finding that the negative effects of poverty on children being worse for those who experience it in the long-term as opposed to short-term (Brooks-Gunn & Duncan, 1997). All participants who were missing income data for either 1966 or 1974 were eliminated from the analysis (n = 396; most of these were not included in the follow-up collection in 1974). The remaining sample consisted of 846 individuals.

Maternal Depression. Depression, as reported by mothers or primary guardians, is measured when Woodlawn children are in first grade (time 1 of data collection) and again when they are 14-16 years-old (time 2 of data collection). The same item was used at both times to measure frequency of how often mother felt generally "sad and blue" on a four-point scale from 1=hardly ever; 2=occasionally; 3=fairly often; and 4=very often. Scores on both times were averaged and for those with only one time of data collection, mother's self-reported depression at one time was used to ensure completeness of data. This was done for 47 cases in which the majority of scores were low on depression with values of 1 and several values of 2. Higher average scores would indicate higher depression during both time periods (with the exception of those with missing data who primarily reported low levels of depression) whereas lower scores indicate mother having a lower likelihood of depression. It is expected that children growing up with mothers who exhibit long-term depression (e.g., have higher average depression scores) suffer a greater amount of environmental stress and potential for poor psychosocial outcomes than those who grow up with mothers who are not depressed or experience short-term depression.

Family Structure. This variable is measured by a single item combining parent reports at time 1 and time 2 of data collection. The available choices of family type at times one and two are: (1) no parent category (a) siblings, (b) female non relatives and others, and (c) others; (2) single parent category (a) mother alone, (b) father, (c) grandmother, (d) aunt, (e) stepfather; (3) two or more adult/parent category (a) mother-father, (b) mother-grandmother, (c) mother-aunt, (d) mother-stepfather, (e) mother-older sibling, (f) mother-other adult. No parent and single parent category choices were coded as 1 whereas two or more adult/parent category choices were coded as 2 for both measures of family structure at time one and time two. Time one and time

two family structure/type were combined to create three categories. Having a guardian (no parent) or single parent at both times of data collection is assigned a value of 1, having lived in a family with two or more adults at only one time of data collection is assigned a value of 2, and having lived in a family with two or more adults at both times is assigned a value of 3. The coding scheme is based on the premise that living with at least two adults, regardless of whether the second adult is a child's father, positively contributes to academic achievement (Thompson, Alexander, & Entwisle, 1988).

Attendance/Absenteeism. As was the case for the distal risk and protective factors, school attendance was measured at both times 1 and 2 of data collection. School records were used to report attendance data in first grade. This was a single item, true ratio continuous measure that tracked days a child was present during the entire 1966-1967 school year. The highest reported number of days a child was present is 197 (0 days absent) and the lowest, 102 (95 days missed). When Woodlawn participants were adolescents, they responded to an item measuring their perceived frequency of absenteeism in the last school year (1974-1975) with a value range of 7 = 0 absences and 1 = 21 or more. This latter measure of absenteeism at time two, as opposed to the time one measure, had little predictive validity for the outcome measures of educational attainment and work / income status. Most likely this was due to the subjectivity of self-report (vs. school records) and the categorical range of values for this item. Therefore, only the measure of attendance at time one was used in the analyses that follow.

Disruptive/Inattentive Behavior. This proximal risk factor is measured at three times of data collection: when participants were in first grade via mother (Mother Observation of Child Adaptation - MOCA1) and teacher (Teacher Observation of Child Adaptation - TOCA1) report (time 1a); third grade from teacher report (time 1b); and as adolescents (time 2) by mother report

only. Items measuring child adaptation are similarly worded across times of data collection (1st grade, 3rd grade, and adolescence) and respondents (teachers and mothers). However, after conducting principal component factor analyses on the four items of interest reported in MOCA1 and TOCA1, it was found that two separate factors emerged for mother- and teacher-report on items; factors were not separated by measures. The four items, selected from six possible facets of child adaptation, measure: (a) authority acceptance/aggression; (b) maturation or immaturity; (c) concentration level or restlessness; and (d) inadequacy in classroom performance. These four items are conceived of as representing the construct of disruptive/inattentive behavior.

Measurement of disruptive/inattentive behavior was restricted to mother report at times one and two of data collection based on the following: (a) finding separate factors for mother report and teacher report when children were in first grade (time 1); (b) the timing of mother report (and reporter) was the same as that for distal risk/protective factors; and (c) teacher report only occurring in childhood. To add, a factor analysis on the four measures mother reported on when their children were in first grade and adolescence revealed two factors which appear to be a function of time of measurement. (Kaiser-Meyer-Olkin test of sampling adequacy = .732; loadings on time 1 factor, .400 - .541, loadings on time 2 factor, .611 - .699). (Refer to Appendix to view items from MOCA1 -1st grade - and MOCAF –adolescence - measures.)

Due to differentiation by reporter and time of data collection found in factor analysis, it is conceived that the four items cohere into a single factor indicating disruptive / inattentive behavior. Averages among the four items for mother report at time one and mother report at time two were computed and created as new variables. Because differences exist in the rating scales for mothers' reports at time one and time two (time one has a range of 0 = not at all true of your child, 1 = just a little true of your child, 2 = pretty much true of your child, and 3 = very much

true of your child and time 2 ranges from 1= not at all to 6 = very, very much), the average computed scores for time one and two were standardized and then averaged to combine into a single variable measuring disruptive/inattentive behavior averaged across times of data collection.

Intelligence. Intelligence, measured as intelligence quotient (IQ), is a continuous variable. The sixth edition of the Kuhlmann-Anderson Group Intelligence test was used to indicate IQ scores. Intelligence was measured at two times of data collection – when participants were in first grade prior to receiving intervention and at the end of third grade in which a third grade version of the Kuhlmann-Anderson was administered (Kellam, et al., 1975). Most participants were tested within the Chicago public school system and a small portion of the sample received additional tests at the Woodlawn Mental Health Center (WMHC) in order to control for testing bias (Kellam et al., 1975). Thus, some respondents had two IQ scores whereas others had only one at a given time. For respondents with two IQ scores in the same year of measurement, scores were averaged. Some IQ scores were obtained in first grade and some were obtained in third grade.

Small relations were found between the three proximal variables, attendance, disruptive/inattentive behavior, and intelligence. Hence, due to a lack of independence among contributing mediators and resulting greater explanation in outcomes when mediators were combined, all three were examined simultaneously, rather than separately.

Outcome Variables

Educational Attainment. Measured variable, ordinal, single item. Records from the Chicago City Public Schools were examined in 1982 when participants were an average of 20 years of age to find out whether they had graduated high school. These data were combined with

data from self-report at age 32 to indicate educational attainment (see Ensminger et al., 1996). The following ordinal values are used in this item: 0 = some grade school, no GED nor diploma; 1 = high school dropout, no diploma; 2 = received GED; 3 = high school diploma; 4 = some college; and 5 = college degree earned. Also, a dummy variable discerning whether participants had graduated high school is available. However, this dummy coded item will not be used in subsequent analyses.

Employment and Income. Measures of employment and income were combined into a single measure of outcome. The combination is based on a noted positive relation between income and work status (Ceci & Williams, 1997) and a longitudinal study of at-risk minority urban youth that combined variables such as employment status and education to indicate socioeconomic outcome (Furstenberg & Kmec, 2000). Three dummy coded items, asking Woodlawn study's young adults: whether they were working full-time or not; working part-time or not; and had a job, but were temporarily ill, on vacation, or not working due to a strike, were combined into a single, ordinal measure of work status. New values for the combined working variable are: 0 = not working; 1 = has job, but temporarily not working; 2 = working part-time; 3 = working full-time; 4 = working both full-time and part-time. Income in young adulthood (1991) is measured and reported similar to income of their family of origin in 1966 and 1974. Income ranges, in thousands, were recoded to middle values (e.g., value of 18 = $50,000 – $54,999 → $52,500) and recoded into a new income variable. The two recoded variables (income and employment status) were standardized and averaged to create a combined measure. The standardized forms of income and employment status had a Pearson correlation of .482 with $p<.000$. (See Table 3.5 for correlations among item measures)

Table 3.5 Pearson Correlations Among Measures: Intervention, Distal, Proximal, and Outcome Variables

Variable	1	2	3	4	5	6	7	8	9
Predictor variables									
1. Intervention	–	.034	-.014	-.025	-.049	.015	-.145	.009	.026
Sig.		*ns*	*ns*	*ns*	*ns*	*ns*	(.000)	*ns*	*ns*
n		846	845	846	724	836	797	695	642
Distal predictor variables									
2. Poverty		–	.148	-.416	-.263	.139	.261	-.222	-.239
Sig.			(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
n			845	846	724	836	797	695	642
3. Mother's Depression			–	-.129	-.095	.222	.073	-.092	-.093
Sig.				(.000)	(.010)	(.000)	(.040)	(.015)	(.018)
n				845	723	835	796	694	641
4. Family Structure				–	.128	-.115	-.172	.192	.225
Sig.					(.001)	(.001)	(.000)	(.000)	(.000)
n					724	836	797	695	642
Proximal predictor variables									
5. IQ (Intelligence)					–	-.197	-.195	.331	.254
Sig.						(.000)	(.000)	(.000)	(.000)
n						714	694	596	551
6. Disruptive/Inattentive Behavior						–	.100	-.267	-.210
Sig.							(.005)	(.000)	(.000)
n							787	690	637
7. Absence							–	-.210	-.116
Sig.								(.000)	(.004)
n								652	604
Outcome Variables									
8. Educational Attainment								–	.511
Sig.									(.000)
n									641
9. Employment (Work/Income) Status									–

CHAPTER 4

RESULTS

The purpose of this study was to examine a mediator model of distal and proximal risk and protective factors for adolescent risk behavior and subsequent outcomes in young adulthood. Distal risk factors are conceived of as impermeable to intervention and reflective of an individual's context. Proximal risk factors are immediate to the individual and often targeted for intervention for preventing risk behavior and promoting positive youth development.

Mediator Question

Proximal risk factors that are more immediate to an individual are expected to mediate the relation between contextual, distal risk and protective factors and youth outcomes. The first question this study aims to answer with the contextually rich sample of the Woodlawn Epidemiological Longitudinal Mental Health Study is: Do proximal risk/protective factors mediate the relation between distal risk factors and young adult outcomes?

To examine this question, six hypotheses were tested. Results for each one are reported below. Although there is a hypothesis for each distal variable, analyses were not conducted for each one individually; analyses were conducted using a linear combination of distal variables. The reason for doing this was to take into account the correlations among distal variables. Before reporting results for each hypothesis, results for the overall procedure suggested by Baron and Kenny (1986) are reported for each dependent variable.

Baron and Kenny Process for Educational Completion

For the distal variables *poverty, mother's depression, and family structure*, mediator variables *school attendance, disruptive/inattentive behavior*, and *intelligence*, and outcome variable *educational completion*, the results are as follow. *First step*: the distal variables poverty, mother's depression, and family structure were associated with the mediator variables, IQ R^2=.073, p<.000; disruptive/inattentive behavior R^2=.063, p<.000; school attendance R^2=.073, p<.000. (See Table 4.1 for individual Betas. *Second step*: the distal variables poverty, B=-.165, p<.000, mother's depression, ns, and family structure, B=.115, p<.005, were associated with educational completion, R^2=.063, p<.000. *Third step*: when the mediators were added to the prediction equation, the coefficients for two of the distal variables were non significant; one (family structure) decreased, $B_{step\ 2}$= .115 p<.005, to, $B_{step\ 3}$= .093, p<.03. The change in the coefficient for family structure, calculated by a Sobel (1990) test statistic (see Discussion, 'Limitations' Section), was not significant. The overall equation was significant, R^2=.189, p<.011. See Table 4.1 and Figure 4.1.

Hypotheses

Hypothesis 1. The association between poverty and educational completion will be significantly reduced by a combination of mediating variables including, intelligence, disruptive/inattentative behavior, and school attendance.This hypothesis was rejected. There was a significant relation between poverty and educational completion at step 2, but not at step 3; however, even though the regression coefficient at step 3 was not significant, the difference in the two coefficients was not significantly different according to the Sobel test (cf Baron & Kenney, 1986 and Discussion 'Limitations' Section).

Table 4.1. Mediator Model for Educational Completion

	BETA	R^2	*p*
Step 1. Dependent Variable (Mediator), IQ, on Distal			
Poverty	-.247		.000
Mother's Depression			*ns*
Family Structure			*ns*
R^2		.073	.000
Step 1. Dependent Variable (Mediator), Disruptive/Inattentive Behavior, on Distal			
Poverty	.086		.021
Mother's Depression	.202		.000
Family Structure			*ns*
R^2		.063	.000
Step 1. Dependent Variable (Mediator), School Attendance, on Distal			
Poverty	-.219		.000
Mother's Depression			*ns*
Family Structure	.081		.031
R^2		.073	.000
Step 2. Dependent Variable, Educational Completion, on Distal			
Poverty	-.165		.000
Mother's Depression			*ns*
Family Structure	.115		.005
R^2		.063	.000
Step 3. Dependent Variable, Educational Completion, on Proximal then Distal			
IQ	.259		.000
Disruptive/Inattentive Behavior	-.167		.000
School Attendance	.115		.004
Poverty			*ns*
Mother's Depression			*ns*
Family Structure	.093		.029
R^2		.189	.011

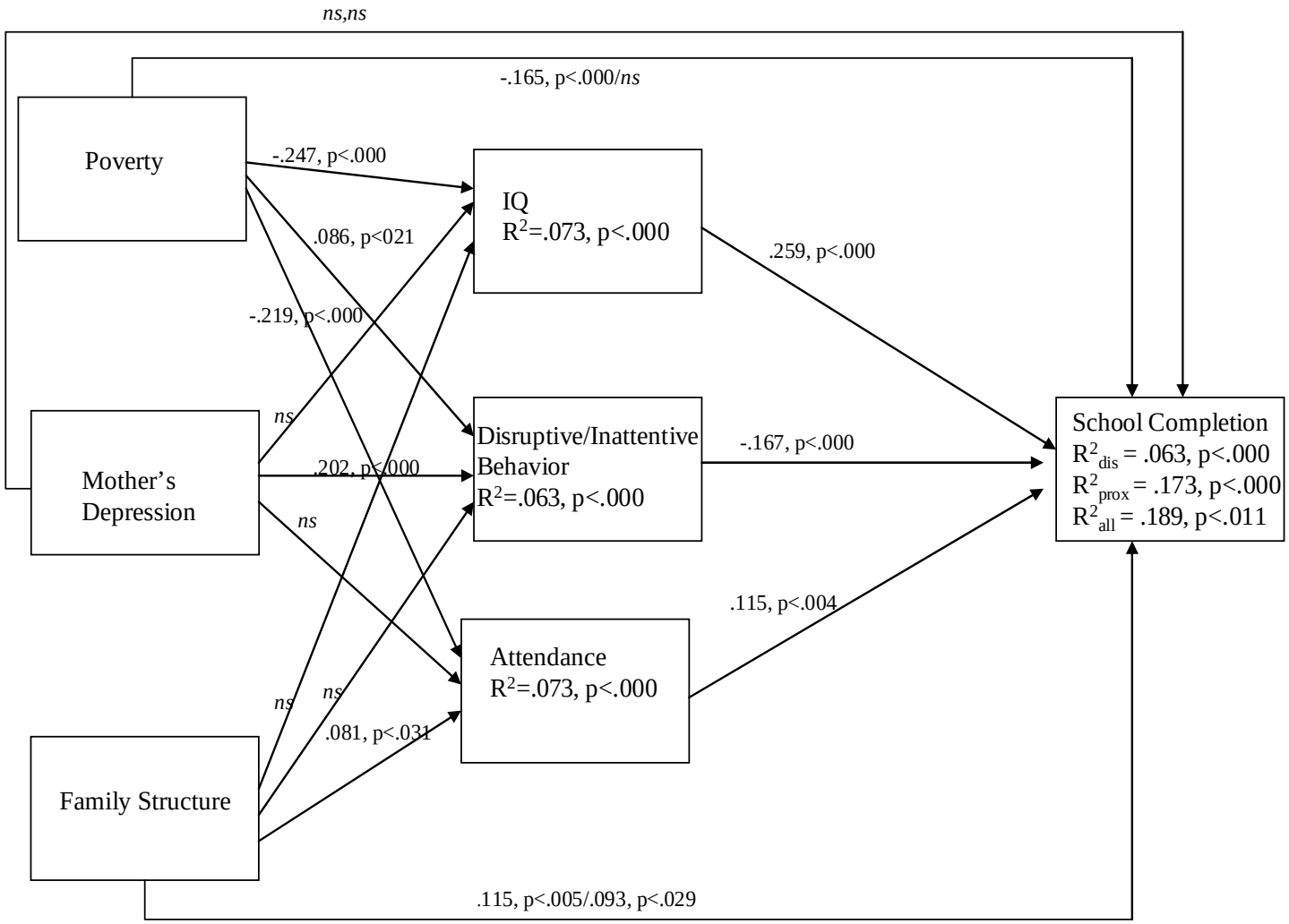


Figure 4.1. Results of Mediator Analysis on School Completion Outcome.

Hypothesis 2. The association between mother's depression and educational completion will be significantly reduced by a combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence. This hypothesis was rejected. There was no significant relation between mother's depression and educational attainment at any step.

Hypothesis 3. The association between family structure and educational completion will be significantly reduced by a combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence. This hypothesis was rejected. There was a significant relation between family structure and educational completion at Step 2 but not at Step 3; the difference in the two coefficients was not significant.

Baron and Kenny Process for Work/Income Status

For the distal variables *poverty, mother's depression, and family structure*, mediator variables *school attendance*, *disruptive/inattentive behavior*, and *intelligence*, and outcome variable *work/income status*, the results are as follow. *First step*: the distal variables poverty, mother's depression, and family structure were associated with the mediator variables, IQ R^2=.073, p<.000; disruptive/inattentive behavior R^2=.063, p<.000; school attendance R^2=.073, p<.000. (See Table 4.2 for individual Betas. *Second step*: the distal variables poverty, B=-.168, p<.000, mother's depression, ns, and family structure, B=.147, p<.001, were associated with work/income status, R^2=.077, p<.000. *Third step*: when the mediators were added to the prediction equation, the coefficients for two of the distal variables were non significant; one (poverty) decreased but was still significant, $B_{step\ 2}$= -.168 p<.000, to, $B_{step\ 3}$= -.104, p<.031. The difference in the coefficients for poverty was not significant. The overall equation was significant, R^2=.117, p<.000. See Table 4.2 and Figure 4.2.

Hypothesis 4. The association between poverty and work/income status will be significantly reduced by a combination of mediating variables including, intelligence, disruptive/inattentive behavior, and school attendance. This hypothesis was rejected. Both coefficients for poverty were significant, but they were not significantly different when evaluated with the Sobel (1990) test.

Hypothesis 5. The association between mother's depression and educational completion will be significantly reduced by a combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence. This hypothesis was rejected. There was no significant relation between mother's depression and work/income status at any step.

Hypothesis 6. The association between family structure and educational completion will be significantly reduced by a combination of mediating variables including school attendance, disruptive/inattentive behavior, and intelligence. This hypothesis was rejected. There was a significant relation between family structure and work/income status at Step 2 but not at Step 3; however, the two coefficients were not significantly different according to the Sobel (1990) test.

Moderator Question

Ample support exists in the literature for the mediator model of adolescent risk. Thus, results for the mediator analysis were unexpected. Had the more rigorous criterion of the Sobel test not been used to test for difference in predictive ability of distal variables under different conditions, mediation might have been found. The mediator model for adolescent risk was not confirmed in these data. Still, it is possible that the intervention, a moderator variable, might alter the results found in the mediator analyses. The primary concern in this study was whether

Table 4.2 Mediator Model for Work/Income Status

	BETA	R^2	*p*
Step 1. Dependent Variable (Mediator), IQ, on Distal			
Poverty	-.247		.000
Mother's Depression			*ns*
Family Structure			*ns*
R^2		.073	.000
Step 1. Dependent Variable (Mediator), Disruptive/Inattentive Behavior, on Distal			
Poverty	.086		.021
Mother's Depression	.202		.000
Family Structure			*ns*
R^2		.063	.000
Step 1. Dependent Variable (Mediator), School Attendance, on Distal			
Poverty	-.219		.000
Mother's Depression			*ns*
Family Structure	.081		.031
R^2		.073	.000
Step 2. Dependent Variable, Work/Income Status, on Distal			
Poverty	-.168		.000
Mother's Depression			*ns*
Family Structure	.147		.001
R^2		.077	.000
Step 3. Dependent Variable, Work/Income Status, on Proximal then Distal			
IQ	.191		.000
Disruptive/Inattentive Behavior	-.123		.005
School Attendance			*ns*
Poverty	-.104		.031
Mother's Depression			*ns*
Family Structure			*ns*
R^2		.117	.006

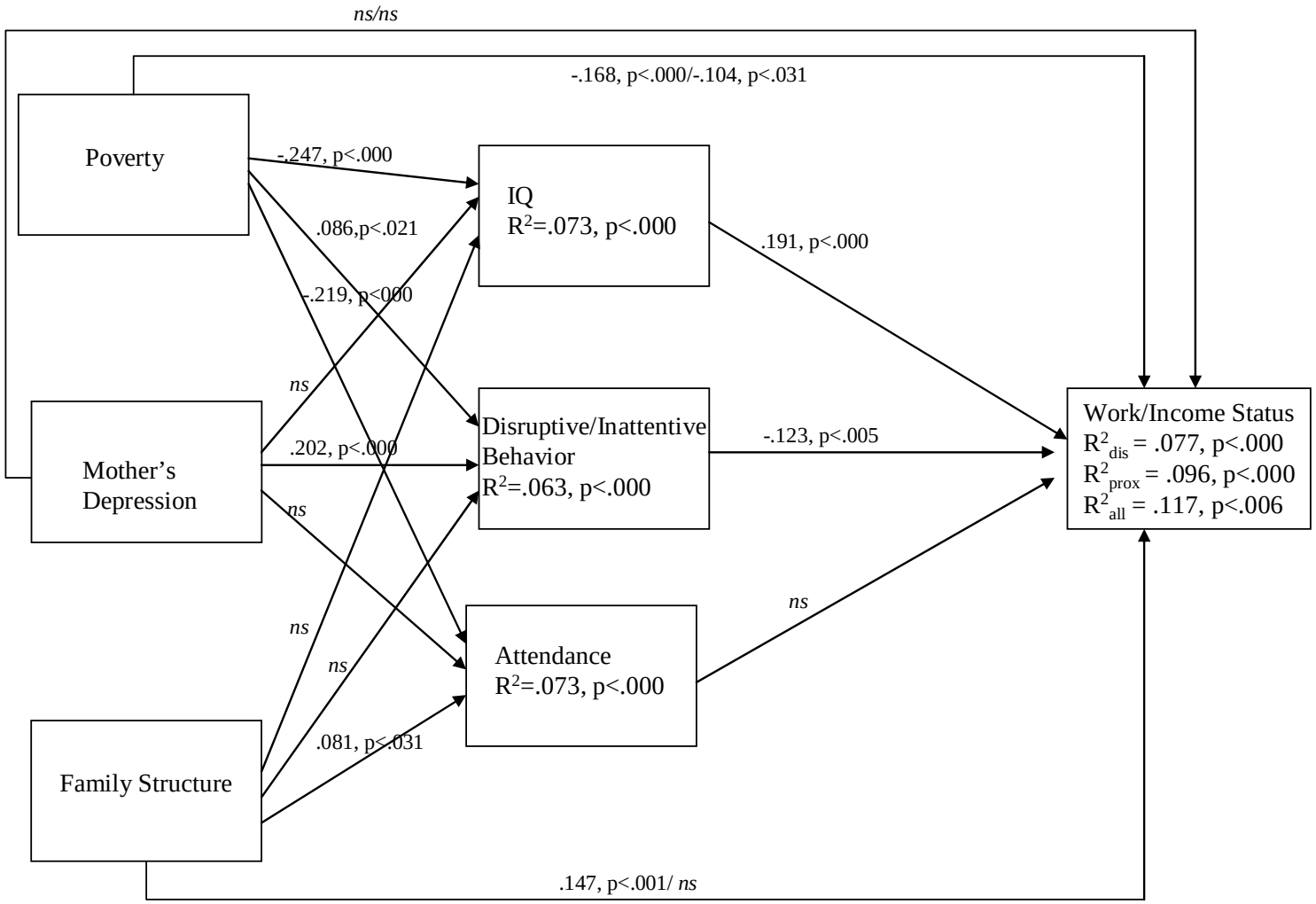


Figure 4.2. Results of Mediator Analysis on Work/Income Status Outcome.

the presence of first grade, early intervention, would moderate the influence that distal risk and protective factors have on outcome (expecting intervention to bolster protection and counteract risk). Thus, the second question addressed in this study is: Does intervention alter the mediating effects of proximal risk and protection on the relation between distal risk/ protection and outcomes?

To examine this question, six initial hypotheses were tested: one for each distal variable (total of three) for the outcome variable *educational completion* and one for each distal variable (three total) for the outcome variable work/income *status*. The research question and hypotheses tested are as follow: [Note that the question and hypotheses are not the same as those presented in the introduction. Rather, an intermediary step in the analysis is presented here. Prior to testing moderated mediation, a test of the moderator effect of intervention on the direct relation between distal risk factors and outcomes needs to be done (Baron & Kenny, 1986).]

Moderator question: Provided a relation between distal risk/protective factors and long-term outcomes is found in the adolescent risk model, are these effects the same with and without early intervention?

Hypotheses.

1.-3. The association between poverty, mother's depression, or family structure and educational completion will change (decrease) as a result of intervention.

4.-6. The association between poverty, mother's depression, or family structure and work/income status will change (decrease) as a result of intervention.

The test of each hypothesis includes three steps, following the model for analysis of moderation proposed by Baron and Kenny (1986) and are reported below. The results indicate

that intervention does not interact with any of the three distal risk/protective factors to differentially influence young adult outcomes. See Table 4.3 for complete information.

For the distal variable *poverty*, the moderator *intervention*, and outcome variable *educational completion*, the results are as follow. *First step*: the distal variable poverty was associated with the outcome variable, B=-.223, p<.000. *Second step*: intervention was not associated with educational completion. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to educational completion, B=-.234. The overall equation including poverty and intervention as predictors of educational attainment was not significant (R^2=.054, p<.080).

For the distal variable *mother's depression*, the moderator *intervention*, and outcome variable *educational completion*, the results are as follow. *First step*: the distal variable mother's depression was associated with the outcome variable, B=-.092, p<.02. *Second step*: intervention was not associated with educational completion. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to educational completion. The overall equation including mother's depression and intervention as predictors of educational completion was not significant.

For the distal variable *family structure*, the moderator *intervention*, and outcome variable *educational completion*, the results are as follow. *First step*: the distal variable family structure was associated with the outcome variable, B=.192, p<.000. *Second step*: intervention was not associated with educational completion. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to educational completion. The overall equation including family structure and intervention as predictors of educational completion was not significant.

Table 4.3. Results of Tests of Moderator Models

Variables	BETA	R^2	*p*
Moderator: Intervention, Mediator: Intelligence			
Poverty	-.261		.000
Intervention			*ns*
Poverty X Intervention	-.304		.02
R^2		.279	.000
Mom's Depression	-.097		.009
Intervention			*ns*
Mom Depress X Intervention			*ns*
R^2		.012	.03
Family Structure	.127		.001
Intervention			*ns*
Fam Structure X Intervention			*ns*
R^2		.139	.003
Moderator: Intervention, Mediator: Disruptive/Inattentive Behavior			
Poverty	.139		.000
Intervention			*ns*
Poverty X Intervention			*ns*
R^2		.144	.001
Mom's Depression	.222		.000
Intervention			*ns*
Mom Depress X Intervention			*ns*
R^2		.223	.000
Family Structure	-.115		.001
Intervention			*ns*
Fam Structure X Intervention			*ns*
R^2		.128	.003
Moderator: Intervention, Mediator: School Attendance			
Poverty	-.261		.000
Intervention	.139		.000
Poverty X Intervention			*ns*
R^2		.293	.000
Mom's Depression	-.075		.03
Intervention	.133		.000
Mom Depress X Intervention			*ns*
R^2		.154	.000
Family Structure	.177		.000
Intervention	.136		.000
Fam Structure X Intervention			*ns*
R^2		.221	.000

Table continues

Table 4.3 Results of Tests of Moderator Models (continued)

Variables	BETA	R^2	*p*
<u>Moderator: Intervention, Outcome: Educational Completion</u>			
Poverty	-.223		.000
Intervention			*ns*
Poverty X Intervention	-.234		.08
R^2		.054	.000
Mom's Depression	-.092		.02
Intervention			*ns*
Mom Depress X Intervention			*ns*
R^2		.103	*ns*
Family Structure	.192		.000
Intervention			*ns*
Fam Structure X Intervention			*ns*
R^2		.197	*ns*
<u>Moderator: Intervention, Outcome: Work/Income Status</u>			
Poverty	-.240		.000
Intervention			*ns*
Poverty X Intervention			*ns*
R^2		.058	*ns*
Mom's Depression	-.093		.02
Intervention			*ns*
Mom Depress X Intervention			*ns*
R^2		.098	*ns*
Family Structure	.226		.000
Intervention			*ns*
Fam Structure X Intervention			*ns*
R^2		.236	*ns*

For the distal variable *poverty*, the moderator *intervention*, and outcome variable *work/income*, the results are as follow. *First step*: the distal variable poverty was associated with the outcome variable, B=-.240, p<.000. *Second step*: intervention was not associated with work/income. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to work/income status. The overall equation including poverty and intervention as predictors of work/income was not significant.

For the distal variable *mother's depression*, the moderator *intervention*, and outcome variable *work/income*, the results are as follow. *First step*: the distal variable mother's depression was associated with the outcome variable, B=-.093, p<.019. *Second step*: intervention was not associated with work/income. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to work/income status. The overall equation including mother's depression and intervention as predictors of educational attainment was not.

For the distal variable *family structure*, the moderator *intervention*, and outcome variable *work/income*, the results are as follow. *First step*: the distal variable family structure was associated with the outcome variable, B=.226, p<.000. *Second step*: intervention was not associated with work/income status. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to work/income. The overall equation including family structure and intervention as predictors of work/income status was not significant.

Post Hoc Question

It was disappointing to find that early intervention did not seem to have an influence on the mediator results. However, the failure to find an interaction between distal factors and

intervention called for further examination of possible effects of intervention. Because first grade intervention did not moderate the direct relation between distal factors and adult outcomes, and appeared to make a difference in attendance, a mediating variable, of that same year ($F_{1, 795}$ = 17.061, p<.000), an examination of the interaction between intervention and mediating variables was performed. See Table 4.4 for complete information.

The new question, whether intervention interacts with proximal factors as they influence long-term / young adult outcomes, was subsequently analyzed. Intelligence was excluded from the analysis because the single measure included third grade IQ measures for some participants who lacked data in first grade. Therefore, due to discrepancy in timing of the measure (e.g., first grade IQ was tested prior to intervention whereas third grade testing occurred nearly two years after the intervention took place), IQ was excluded from the following analysis. Disruptive/inattentive behavior (mother report) and attendance (school records) were both assessed at or near the end of the intervention (end of first grade school year). Moreover, disruptive/inattentive behavior was assessed during adolescence by mother report.

Post Hoc Moderator Question

Does the presence of early intervention change the effect of proximal risk factors on outcomes?

Post Hoc Moderator Hypotheses

1.-2. The association between school absence or disruptive/inattentive behavior and educational attainment will change (decrease) as a result of intervention.

Table 4.4. Results of Post-Hoc Moderator Tests

Variables	BETA	R^2	*p*
Moderator on Educational Completion			
Intervention			*ns*
Moderator: Intervention, Outcome: Educational Completion			
School Attendance	.224		.000
Intervention			*ns*
School Attendance X Intervention			*ns*
R^2		.050	*ns*
Disruptive/Inattentive Behavior	-.267		.000
Intervention			*ns*
Disruptive/Inattentive Behavior X Intervention			*ns*
R^2		.072	*ns*
Moderator on Work/Income Status			
Intervention			*ns*
Moderator: Intervention, Outcome: Work/Income Status			
School Attendance	.139		.001
Intervention			*ns*
School Attendance X Intervention	.970		*ns* (.083)
R^2		.025	*ns* (.083)
Disruptive/Inattentive Behavior	-.211		.000
Intervention			*ns*
Disruptive/Inattentive Behavior X Intervention			*ns*
R^2		.045	*ns*

3.-4. The association between school absence or disruptive/inattentive behavior and work/income status will change (decrease) as a result of intervention.

Post Hoc Analyses: Results

The above four hypotheses were tested: one for each proximal variable (total of two, excluding IQ) in relation to the two outcome variables (total of two), as their relation was affected by the moderator, *first grade intervention*. The test of each hypothesis includes three steps, following the model for analysis of moderation proposed by Baron and Kenny (1986) and are reported below. The results indicate that intervention does not interact with any of the three proximal risk/protective factors to differentially influence young adult outcomes.

For the proximal risk variable *school attendance*, the moderator *intervention*, and outcome variable *educational completion*, the results are as follow. *First step*: the proximal variable school attendance was associated with the outcome variable, B=.224, p<.000. *Second step*: intervention was not associated with educational completion. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to educational completion. The overall equation including school attendance and intervention as predictors of educational attainment was not significant.

For the proximal risk variable *school attendance*, the moderator *intervention*, and outcome variable *work/income status*, the results are as follow. *First step*: the proximal variable school attendance was associated with the outcome variable, B=.139, p<.001. *Second step*: intervention was not associated with work/income status. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to work/income status. The overall equation including school attendance and intervention as predictors of work/income status was not significant, however marginal, R^2=.025, p<.083.

For the proximal risk variable *disruptive/inattentive behavior*, the moderator *intervention*, and outcome variable *educational completion*, the results are as follow. *First step*: the proximal variable disruptive/inattentive behavior was associated with the outcome variable, B=-.267, p<.000. *Second step*: intervention was not associated with educational completion. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to disruptive/inattentive behavior. The overall equation including disruptive/inattentive behavior and intervention as predictors of educational completion was not significant.

For the proximal risk variable *disruptive/inattentive behavior*, the moderator *intervention*, and outcome variable *work/income status*, the results are as follow. *First step*: the proximal variable disruptive/inattentive behavior was associated with the outcome variable, B=-.211, p<.000. *Second step*: intervention was not associated with work/income status. *Third step*: the interaction term was added to the prediction equation but did not significantly contribute unique variance to work/income status. The overall equation including disruptive/inattentive behavior and intervention as predictors of work/income status was not significant.

Conclusions

These results yield no support for the mediator model of adolescent risk and no support for moderation by early intervention of the mediator model. Theoretically, this is of concern and might cause one to question the integrity of the data. However, there are other findings that confirm expectations. Notice, for example, that all three mediator (proximal) variables are related to educational completion in the direction expected, and these results may be considered stable. IQ was the most predictive of educational completion, school attendance was the least. As disruptive/inattentive behavior increased, school completion became less likely. The

predictive value of the proximal variables for work/income status was slightly different, and interesting. School attendance was not predictive of work/income status, but disruptive/inattentive behavior seems to result in a lower status of work/income. Again, IQ was the most predictive of work/income status.

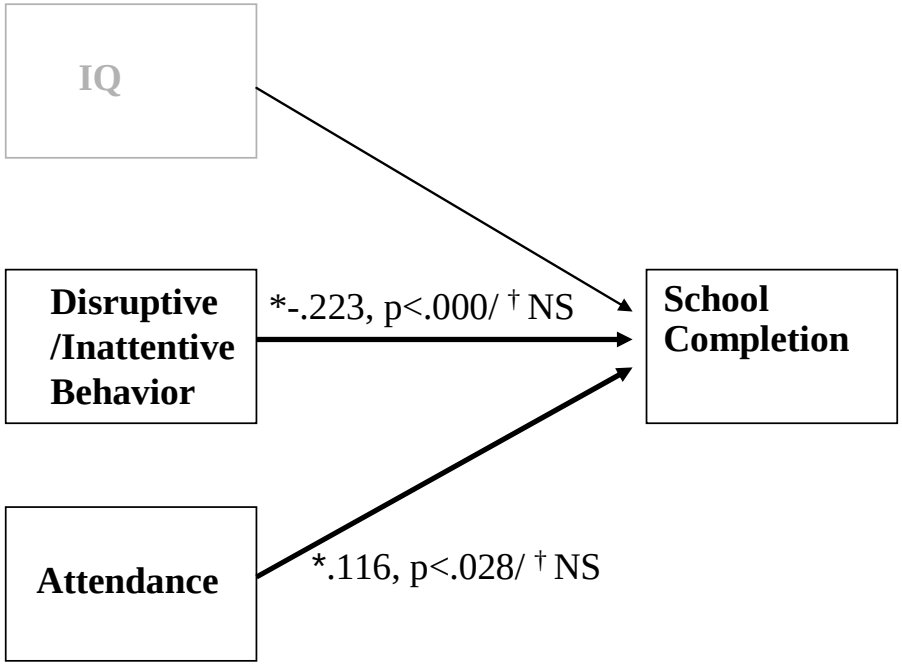
Other findings of interest are, for example, the role of poverty. Poverty is a significant predictor of all three mediator (proximal) variables, particularly IQ. Another finding, that mother's depression is only predictive of disruptive/inattentive behavior is also interesting. Finally, family structure plays a weak but stable role in the prediction of IQ and school attendance.

Of all the mediators, disruptive/inattentive behavior has the least association with distal factors such as family structure and poverty. This may be a function of measure as well as reporter of disruptive and inattentive behavior. Parental report at both waves of data collection was used rather than teacher assessment available for the first wave only. At the same time the predictive validity of disruptive/inattentive behavior, with respect to educational and employment outcomes, was second to that of intelligence whereas school attendance had the least, however significant, association with young adult outcomes.

All of these associations have been reported in other studies. This is reassuring as it confirms that the problem is not the data. Rather, it appears that the long-term implications of the distal variables may not be as powerful as I had thought. Certainly these distal variables are not mediated by the variables chosen for this study. Likewise, no moderating effect of intervention was found.

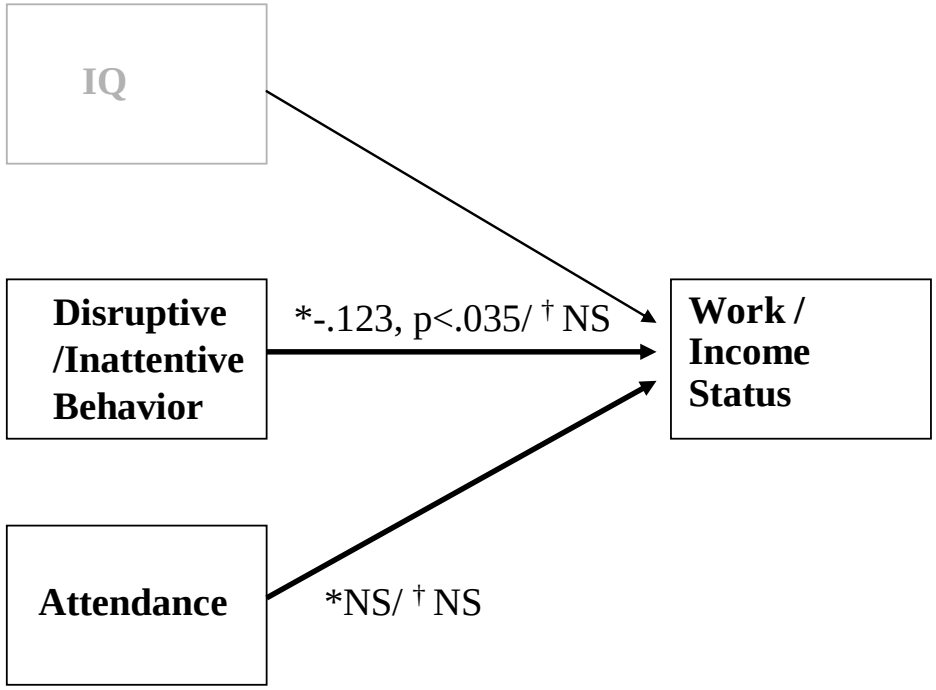
Analyses of moderated mediation in the original hypotheses were curtailed by a failure to find that first grade intervention moderated the relation between distal risk/protective factors and

outcomes. Moderated mediation refers to situations in which a mediated relation varies across levels of moderator (Frazier, Barron, & Tix, 2004), e.g., the poverty – intelligence – educational attainment relation differs in the first grade intervention versus control situations. The first step in finding moderated mediation is to find a moderator effect on the main effect prior to examining moderation on the mediated effect (Baron & Kenny, 1986). Because moderation on the main effect was not found: (1) moderated mediation could not be considered and (2) additional analyses were conducted to view whether intervention moderated the relation between the independent variable and relevant mediator variables. The latter analyses also failed to show a significant interaction in all examined variables. (See Figures 4.3. and 4.4 for relations between mediators – disruptive/inattentive behavior and school absence – and outcomes under experimental and control conditions.)



* experimental group Beta / † control group Beta

. Figure 4.3 Post Hoc Model with Early Intervention as Moderator on School Completion Outcome



* experimental group Beta / † control group Beta

. Figure 4.4 Post Hoc Model with Early Intervention as Moderator on Work/Income Status Outcome

CHAPTER 5

DISCUSSION

The purpose of this study was to examine the moderator effect of early intervention on an adolescent risk, mediator model. The distal and proximal factors selected for this study have demonstrated associations with psychosocial outcomes in adolescence and adulthood. The model follows a stimulus-organism-response (S-O-R) format in which influences at the individual level mediate environmental effects on outcomes. A more apt label for the model is "context-individual-outcome."

The first goal of the research was to discern whether proximal or process factors in childhood and adolescence mediate the relation between distal contextual factors and psychosocial outcomes in young adulthood. Proximal factors are those immediately related to the individual. The contextual risk factor, poverty, is often associated with limitations in psychosocial functioning for children, and effects are expected to carry on into adulthood, manifesting as limited educational and employment/vocational opportunities. Linking contextual or distal risk factors to poor developmental outcomes, e.g., poverty (see Brooks-Gunn & Duncan, 1997), may lead to generalized conclusions and what Bronfenbrenner (1986) termed "social address labels." However, intermediary or process factors, as they are influenced by distal factors, are likely to explain the mechanism through which distal factors operate to affect developmental outcomes. Research evidence for the influences examined (e.g., distal and proximal risk factors) is plentiful, as has been cited in the introduction and literature review

sections. Moreover, results of the current research support the protective functions of family structure (distal factor) and intelligence (proximal factor) on developmental outcomes.

Contrary to this study, the findings for the mediation of childhood poverty on educational attainment and on employment status in adulthood suggest that individual factors are the filter through which contextual effects influence outcomes such as educational attainment. Also, educational attainment is linked with career development (Day & Newburger, 2002), for example, income and employment status. Poverty is associated with a variety of conditions that influence academic achievement such as quality of home environment for fostering cognitive development, parental educational support, (White, 1982) and, at the contextual level, quality of education received (Kozol, 1992). Such conditions are expected to affect a youth's cognitive development, intelligence included. Moreover, stressful conditions created by poverty potentially affect school attendance (Kalil & DeLeire, 2002) and possibly negatively influence children's behavior in the classroom (e.g., poor nutrition, uninvolved parenting, high levels of stress in family relationships). Although poverty was associated with intelligence and school attendance and intelligence and school attendance were associated with school completion, there was no support for the mediating effects of attendance and intelligence on the relation between poverty and school completion.

Prior research supports the relation between family structure (single parent family status) and behavioral problems in adolescence (Blum, et al., 2000). However, long-term effects of family structure on young adult outcomes have not been examined. Family structure, as a contextual variable, does not provide a feasible explanation for variation in young adult adaptation, as it is defined in this study, for a couple of reasons. One, the family structure a child is exposed to growing up may vary with time (e.g., marriage, divorce or remarriage). And, two,

structure of family of origin is likely to be associated with one's own family structure in young adulthood, whereas a wide range of educational backgrounds and employment cannot be adequately explained by family structure in childhood (see Amato & Keith, 1991). The association between family structure in childhood/adolescence and young adult employment and educational attainment can be explained by individual-related mediating variables such as intelligence, school attendance, and inattentive/disruptive behavior. One can speculate how growing up in a family with two adults present may have contributed to behavior, attendance, and school achievement (see Thompson, Alexander, & Entwisle, 1988; Blum et al., 2000). Family structure was associated with elementary school attendance, which makes sense given the greater number of difficulties single parents face in terms of support (Hilton, Desrochers, & Devall, 2001). And, although elementary school attendance, in turn, was associated with school completion, there was no support for mediation by proximal factors on the family structure and school completion association.

Intuitively, one may expect that maternal depression would affect a child's school attendance or possibly IQ due to potential for limited cognitive stimulation in the home. Moreover, there is extensive research supporting the linkage of maternal depression to children's cognitive deficits (Petterson & Albers, 2001) and behavioral difficulties (Nelson et al., 2003; Zuckerman & Beardslee, 1987). This study replicated the latter finding with significant results, (Beta Mom's Depression → Disruptive Inattentive Behavior = .202, $p<.000$). However, considering the large sample size, the amount of variance explained in mediators by mother's depression was small.

It is possible that the way in which mother's depression was measured (as a single item twice with a nine-year interval between data collection times) did not capture the full spectrum

of the mother or primary caretaker's psychological status with regard to depressive symptomatology. The question was general, with no time period specified, concerning how often the primary caretaker felt 'sad and blue'. The lack of specificity with regard to symptomatology and time period of depressed affect, may have limited possible variability in mother's depression. Moreover, using a single-item measure was not conducive to examining the spectrum of maternal depression, specifically, as a latent variable.

The associations found between mediators and young adult outcomes were not surprising, for example, a stronger relation between intelligence and school completion than intelligence with work/income status. Disruptive and inattentive behavior hurts school completion (and academic performance see Finn & Rock, 1997) and work/income status whereas attendance helps educational attainment (see Lehr, Sinclair, & Christenson, 2004). One might expect, had the measure of high school attendance been more valid (e.g., continuous rather than based on arbitrarily defined categories of number of absences, and school reported rather than self-reported for recall information) that a stronger relation with work/income may have been found, an effect that could be partially explained by educational attainment.

In conclusion, considering the fact that distal factors and the proximal factor of disruptive/inattentive behavior (IQ was measured between 1st and 3rd grade and accurate attendance records were only collected at the end of the 1st grade year) were measured at two time periods with a nine-year interval between times of data collection, and that outcome measures were collected some fifteen years after the second wave of data, the strength of associations among factors and outcomes are notable. Although these findings are weak statistically when one considers the sample size, they also appear relatively strong in the context of time between data collection periods and the limitations in measures (e.g., one item). In other

words, “life happened” over the course of the three data collection times in the twenty-five year time span in which data were collected on Woodlawn participants, yet significant distal and proximal effects on long-term outcomes remain.

Intervention in the Early Years

Intervention in the early years is considered to have beneficial effects for youth development, potentially offsetting disadvantages posed by contextual risk factors (Campbell & Pungello, 2000; Campbell et al., 2002). At the conceptual level, intervention has potential to reduce the strength of distal risk factors and the associated mediators’ relation to compromised outcomes. In a moderated mediation model, intervention affects not only distal predictor variables, but also their relation to mediating variables and criterion outcomes. Moreover, intervention may strengthen the relation between distal and proximal protective factors and positive youth development outcomes. Intervention, combined with distal and proximal protective factors, potentially produces an additive buffering effect against distal and proximal risk influences.

In this study, no evidence for a direct effect of intervention on educational attainment or employment status was found. However, recent work with the Woodlawn sample by Joan McCord, Margaret Ensminger, and colleagues (in process) points to a first grade intervention effect on criminal behavior and incarceration in early to mid adulthood. To add, initial assessments of intervention showed that intervention participants were less likely to have sought help from the Woodlawn Mental Health Center from first grade through adolescence than did those who did not receive intervention. This may signify a lesser need among those who received first grade intervention due to bolstering of positive assets and skills in the early years.

An explanation for the lack of first grade intervention effects on young adult outcomes is fairly straightforward. It has been recently demonstrated that educational interventions in early childhood that yield positive results in adolescence and young adulthood occur over a longer time period than one school year (see Campbell & Ramey, 1995 and Campbell et al., 2002 with respect to academic achievement). Moreover, although the theoretical approach of the intervention (based on life course social field theory) was innovative for its time, by today's definitions the Woodlawn intervention may have operated more from a clinically-based than community-based approach. If this is indeed the case it is possible that the intervention had less cultural and personal relevance to participants.

Another aspect of intervention is specificity, not only with respect to targeting a particular population in need, but the specific changes one desires to bring about. The intervention at Woodlawn was concerned with establishing balance between psychological well-being and social adaptation. Employment status and educational attainment are aspects of long-term social adaptation. The intervention was theoretically based in life course social field theory and had the goal of impact upon the life course and adaptation of Woodlawn's third cohort. At the time of intervention, there was a lack of available evaluation research supporting intervention strategies to support psychological well-being and social adaptation. To add, social adaptational status is a broadly defined concept indicated by measures of intelligence, child classroom behavior, adolescent and young adult risk behavior, adult relationship status, adult work status, and income in the Woodlawn study.

By no means is this explanation intended to discredit the Woodlawn Community Longitudinal Epidemiological Mental Health Study or the value of interventions offered. The intervention was innovative in that it was theoretically based, intended for a high-risk population,

and linked community contexts such as family, schools, and local mental health facilities. Moreover, the first grade intervention had far-reaching positive effects on delinquency in adolescence and criminal behavior in adulthood (McCord, Ensminger, et al., in process).

Timing of intervention is another issue to consider. The dynamics of long-term effects and how those are brought about through early intervention in an educational setting was unknown at the time of the Woodlawn study. Interventions may be most effective in preventing high school dropout and promoting vocational skill building when they occur at more relevant transitional periods, namely in the years of high school. One fact to add is that 83 of over 900 adolescents, located at time two of data collection, chose to participate in an intervention in the Woodlawn Community Mental Health Center; however, this was more a matter of persuasive ability of interviewer and parental pressure than actual self-perceived mental health needs (Kellam, et al., 1981). Because this number made up less than ten percent of participants, it is unlikely that the effects of the adolescent intervention confounded results.

Lacy (1992) has identified three types of community-based interventions which are particularly relevant to academic intervention/dropout prevention in the higher grades: (a) school-based programs with a focus on preventing or ameliorating the effects of academic failure (e.g., dropout and limited occupational attainment); (b) resource-based programs granting youth access to a variety of community settings with opportunities for employment and further education; and (c) individual-focused programs with an emphasis on a student's performance in math and English (Lacy, 1992). Examples of community-based interventions that were effective at promoting academic success and school completion were conducted during the high school years. The high-school based Communities in Schools (CIS) partnership, a combined school- and resource-based program that links local, state, and national resources, is noted for high

proportions of school completion among its participants as well as participants believing the program helped them (Cantelon & LeBouef, 1997). A possible combination of all three types of community-based academic intervention, the Community-Based Learning (CBL) initiative of the Los Angeles Unified School District, consists of individual-level instruction, work in small groups, student-initiated learning, and fostering bonds between teachers and students; this program had an apparent impact on grades and attendance, which the evaluators noted holds promise for high school completion (Shumer, 1993).

Another effective school-based program positively impacted students' perceptions of school structure and teacher support in their eighth to ninth grade years as they transitioned into high school (Felner, Ginter, & Primavera, 1982). However, a more recent effort to duplicate the results of this community-based program with ninth grade, mostly Latino, urban students met with much less success (Reyes & Jason, 1991). Perhaps this occurred as a function of failure to follow students through the transition to high school (i.e., from eighth to ninth grade). These results suggest a timing issue with respect to school-based intervention. In other words, the optimal time to intervene is during a time of simultaneous developmental and structural-contextual transitions. Arguably, first grade is a time of transition from a preschool setting to a more formal classroom structure. Moreover, cognitive, social-emotional, and physical gains (e.g., fine motor skills for writing, internalization of actions, an increased capacity for self-regulation) among developing 6-7 year olds is occurring.

It would have been interesting to find an effect of early intervention on this model. If the intervention had been more focused on specific, long-term indicators of psychological well-being and social adaptational status, an effect might have been observed. I think this confirms the need for specific short-term and long-term goals for intervention. Intervention may be a matter of

creating a positive turning point in the lives of at-risk youth. Turning points refer to change in the direction of development and/or effects upon at least one developmental domain, e.g., cognitive (Rutter, 1996). To promote change, an intervention needs to be conceptualized as a turning point with specific outcomes in mind. Broadly based programs may require several years of intervention that link community, family, and peer influences (Ianni & Orr, 1996). Early interventions with long-term goals may be the most difficult to plan and implement. Campbell and colleagues have traced effects of intervention into adolescence, but not young adulthood. More research needs to be done on the transition that emerging adulthood presents to individual adaptation. Microtheory has much to offer in understanding the needs of specific populations and variables that need to change in an intervention.

Limitations

In this multiple mediator model, significant effects were found between: distal and proximal factors; some distal factors and outcomes; and proximal factors and outcomes. However, true mediation was not supported by use of the Sobel (1990) test of unstandardized Beta coefficients. The Sobel (1990) test is an increasingly useful statistical tool for assessing the strength of mediator influence on an independent variable or outcome (Dudley, Benuzillo, & Carrico, 2004). A Sobel test was used to ascertain whether a significant difference occurs between the direct effect of a distal factor on an outcome in young adulthood and the indirect effect of a distal factor on outcome, when mediators are incorporated into the equation. Sobel testing can be used in multiple regression analysis (see Dudley et al., 2004) or path analysis and structural equation models (see MacKinnon Lockwood, Hoffman, West, & Sheets, 2002; Sales, Greeno, Shear, & Anderson, 2004; Sobel, 1990).

It is argued that Baron and Kenney's (1986) approach to testing mediation has low statistical power (MacKinnon, et al., 2002). However, the large sample size was able to compensate for potential loss in statistical power. Another possible reason for the lack of significant findings of mediation is that the use of multiple mediators may have weakened mediator effects. To add, multiple regression defines independent variables as having unique effects and does not account for relations among mediating variables (Short & Hennessy, 1994). Yet correlations among mediator proximal variables were small, albeit statistically significant (See Table 3.5). Hence, based on the limited overlap among mediators, one would expect a greater amount of variance to be explained by the presence of all three mediators combined, rather than individually.

Family structure, for example, is viewed as either a risk or protective factor. The risk factor of single parent family status presents the possibility of a less optimal microsystem for child development, with the exception that adequate social support is available (Garbarino, 1992). Poverty and maternal depression, on the other hand, are solely categorized as risk factors. Disruptive and inattentive behavior are noted risk factors for academic performance and cognitive development. Attendance, however, has been treated as either a risk (school absence) or protective factor. IQ, however, denotes a presence, not absence of intelligence and it has no true zero; thus, most of the time, intelligence has been viewed as having protective influence. It is possible that the choices made in determining which variables denote risk and which have protective influences may have not been ideal in this study, particularly with respect to distal family structure and proximal attendance.

The placement of distal and proximal factors may be problematic as well. For example, maternal depression has been categorized as a distal marker that influences processes which have

direct effects on adolescent adaptation (Cummings & Davies, 1994) as well as a mediator, or proximal process factor, between poverty and child outcomes (Petterson & Albers, 2001; Smeeding, 1995).

Another limitation with regard to risk and protection at the proximal and distal levels is the possibility that chosen process variables were inadequately matched with distal influences. For example, maternal depression, treated as a distal risk factor, was weakly linked, with the exception of disruptive and inattentive behavior, with other proximal processes in this study (intelligence & school attendance). Aside from the initial problem of measurement of maternal depression, there may be better mediators of maternal depression on young adult outcomes. Last, maternal depression's limited influence on employment and educational attainment may be due to measurement error or simply that maternal depression is more appropriately linked to socioemotional (e.g., psychological well-being) rather than social adaptational young adult outcomes, such as career development and educational attainment.

Also, in spite of the strength that longitudinal data collection lends to this study, a measurement related inadequacy occurs with the use of one-item measures. Variables that are measured by more than one item improve findings in mediator and moderator analyses in psychological research (Frazier et al., 2004).

Last, recent proponents of Baron and Kenny's (1986) mediator/moderator distinction work (see Frazier et al., 2004 and Dudley et al., 2004) continue to support the use of multiple regression in fleshing out mediator, moderator and combined models due to its ease of use and ability to easily interpret results. However, path analysis through structural equation modeling and use of latent variables is highly recommended, particularly for longitudinal data. Structural equation modeling enables breaking down effects into those directly brought about by distal

variables and those effects operating through proximal mediator variables (Short & Hennessy, 1994). Future study of moderated mediation with respect to intervention effects over time (e.g., longitudinal analysis) optimally calls for structural equation modeling, in which the relations between and among variables, as well as distinctions made between latent and measured variables, can be discerned

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APPENDIX A – MEASURES TIME 1: FIRST GRADE

Measure of Neighborhood and Parent Characteristics

Family Income 1966

Disruptive/Inattentive Behavior

Measure of Neighborhood Characteristics Time 1 – Parent Interview

How satisfied are you with (item below) here in Woodlawn—very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Safety in the streets	1	2	3	4

Parent Education

What was the last grade you yourself completed in school?

ENTER NO. OF YEARS COMPLETED: _____

And what was the last grade (child's) father completed in school?

ENTER NO. OF YEARS COMPLETED: _____

Total Income 1966

"Now I need a rough idea of the total income of the household. Please look at the other side of the card (CARD 4).

Adding together the whole family income, in which one of these groups did your total family income fall during 1966—before taxes, that is?

Under $2,000 . .	01	$6,000-$6,999 . .	06
$2,000-$2,999 . .	02	$7,000-$7,999 . .	07
$3,000-$3,999 . .	03	$8,000-$8,999 . .	08
$4,000-$4,999 . .	04	$9,000-$9,999 . .	09
$5,000-$5,999 . .	05	$10,000 or more .	100

Disruptive/Inattentive Behavior Time 1

Parent Interview Time 1

"I'm going to describe five different types of children (four of which are relevant to this study and listed below). For each one, please tell me whether you would say (child) is not at all that way, just a little that way, quite a bit that way, or very much that way. CIRCLE ONE CODE EACH LINE.

	Not at All	Just a Little	Quite a Bit	Very Much
1. How about—fights too much, doesn't obey you, steals or destroys things, lies to you and resists you?	0	1	2	3
2. Acts younger than (his/her) age, cries too much or has temper tantrums, sucks (his/her) thumb or wets (his/her) pants, is always trying to get attention?	0	1	2	3
3. Is bright enough, but just doesn't seem to learn as well or do things as well as (he/she) seems able to do?	0	1	2	3
4. Is awfully restless, fidgets all the time, can't sit still?	0	1	2	3

APPENDIX B – MEASURES TIME 2: ADOLESCENCE

Mother Report:

- Family Income 1974
- Observation of Child (Adolescent) Adaptation – Form F
- Mother's Aspirations/Expectations for Adolescent

Adolescent Report:

- Absenteeism
- Adolescent's Aspirations/Expectations for Self

Total Income 1974

ASK ALL RESPONDENTS:

For statistical purposes, we need a general idea of your total family income plus that of any family member living with you. Just give me the letter of the category that includes your total family income for 1974.

HAND CARD H

a.	Less than $ 1,000 . . .	01	
b.	$ 1,000 - $ 1,999 . . .	02	
c.	$ 2,000 - $ 2,999 . . .	03	
d.	$ 3,000 - $ 3,999 . . .	04	
e.	$ 4,000 - $ 4,999 . . .	05	
f.	$ 5,000 - $ 5,999 . . .	06	
g.	$ 6,000 - $ 6,999 . . .	07	
h.	$ 7,000 - $ 7,999 . . .	08	
i.	$ 8,000 - $ 8,999 . . .	09	
j.	$ 9,000 - $ 9,999 . . .	10	
k.	$ 10,000 -$10,999 . . .	11	
l.	$ 11,000 -$11,999 . . .	12	
m.	$ 12,000 -$12,999 . . .	13	
n.	$13,000 - $13,999 . . .	14	
o.	$14,000 - $14,999 . . .	15	
p.	$15,000 - $15,999 . . .	16	
q.	$16,000 - $16,999 . . .	17	
r.	$17,000 - $17,999 . . .	18	
s.	$18,000 - $18,999 . . .	19	
t.	$19,000 - $19,999 . . .	20	
u.	$20,000 - $20,999 . . .	21	
v.	$21,000 - $21,999 . . .	22	
w.	$22,000 - $22,999 . . .	23	
x.	$23,000 - $23,999 . . .	24	
y.	$24,000 - $24,999 . . .	25	
z.	$25,000 or more. . . .	26	

IF R REFUSES, SAY:

Like with other information in this questionnaire, your answer will be kept strictly confidential. Your name will not be connected with any of these answers and we are not permitted to reveal or discuss anything from an interview with any person or agency.

Mother Observation of Child Adaptation – Form F – Adolescence – Time 2

I'm going to describe different types of young people. For each type, (four of interest for this study), please tell me how much like that (NAME) is. (READ ITEM A and HAND CARD 1.) Is (NAME) very, very much like that; very much like that; pretty much like that; somewhat like that; a little like that; or not at all like that? (REPEAT FOR B through D)

	Very Very Much	Very Much	Pretty Much	Some	A Little	Not at All
A. Fights too much, doesn't obey you, destroys things, lies to you, resists you.	6	5	4	3	2	1
B. Acts younger than (his/her) age, cries too much or has temper tantrums.	6	5	4	3	2	1
C. Is bright enough, but just doesn't seem to learn as well or do things as well as (he/she) seems able to	6	5	4	3	2	1
D. Is awfully restless, fidgets all the time, can't sit still	6	5	4	3	2	1

Educational Aspirations for Teen – Mother Interview Time 2

How far would you like (Name) to go in school if (he/she) had the chance?

Some high school 1
Finish high school 2
Some college 3
Finish college 4
Beyond college 5

How far do you think (he/she) really will go, the way it looks now?

Some high school 1
Finish high school 2
Some college 3
Finish college 4
Beyond college 5

T2 – What's Happening Questionnaire (Adolescent Self-report)

Absenteeism in Adolescence

About how many days were you absent for any reason from school last year? None, one to two, three to five, six to ten, eleven to fifteen, sixteen to twenty, twenty-one or more.

Educational Aspirations for Teen – Teen Interview (What's Happening? Questionnaire) Time 2

How far would you like to go in school if you have the chance? Mark the farthest you would like to go.

Some high school 1
Finish high school 2
Some college 3
Finish college 4
Beyond college 5

How far do you think you really <u>will</u> go, the way it looks now? Mark the farthest you really will get.

Some high school 1
Finish high school 2
Some college 3
Finish college 4
Beyond college 5

APPENDIX C – MEASURES AT BOTH TIME 1 AND TIME 2

Mothers' Depression Time 1 & Time 2

Family Structure

Mother's Depression – Time 1

	Very Often	Fairly Often	Occa-sionally	Hardly Ever
How often do you have days when you are sad and blue --very often, fairly often, occasionally, or hardly ever?	3	2	1	0

Mother's Depression – Time 2

	Very Often	Fairly Often	Occa-sionally	Hardly Ever
How often do you have days when you are sad and blue --very often, fairly often, occasionally, or hardly ever?	4	3	2	1

Follow-Up Mother Interview - Time 2

"As you know, I am here as part of a study following up a first-grade program back in 1966-1967. I need to talk to you mainly about (NAME OF SAMPLE CHILD)."

(1) To begin with, how many people live in this household? ENTER # IN BOX ☐

(2) Let's see, the child we interviewed you before about is (NAME), ENTER BELOW ON LINE [1] FROM FACE SHEET.

(3) May I have your first name, please? ENTER R'S NAME ON LINE [2].

(4) Who are the other members of (NAME OF CHILD'S) immediate family living in the household with you and (NAME)? ENTER NAMES OF STEP-PARENTS OR FOSTER PARENTS IF ANY; BROTHERS, SISTERS, AND OTHER FAMILY MEMBERS ON SUCCEEDING LINES.

(5) What other persons live in the household with (CHILD)? ENTER NAMES OF UNRELATED PERSONS LIVING IN HOUSEHOLD. THEN ASK B-F FOR EACH PERSON.

NOTE: IF THERE IS NO FATHER, STEP-FATHER, OR FOSTER FATHER IN THE HOME, LEAVE LINE [3] BLANK. IF ONE OTHER ADULT LIVES IN HH, CIRCLE THE LINE # ON WHICH YOU HAVE ENTERED HIS OR HER NAME AND REFER TO THIS PERSON BY NAME WHENEVER THE QESTIONNAIRE SAYS "(HUSBAND/OTHER ADULT)." IF 2 OR MORE OTHER ADULTS LIVE WITH R, ASK HER WHICH ONE IS THE "SIGNIFICANT" ADULT.

A. INDIVIDUAL	B. What is (his/her) relationship to (CHILD)?	C. DO NOT ASK FOR CHILD'S PARENTS, BROTHERS, OR SISTERS: Is that a relative on (CHILD)'s mother's or father's side?		D. SEX		E. How old was (he/she) on (his/her) last birth-day?	F. IF AGE 14+: Is (he/she) married, separated, divorced, widowed, or never married? CODE "INFORMAL" WITHOUT ASKING, IF VOLUNTEERED					
LINE #:	X	Mother	Father	Male	Female	X	Married	Separated	Divorced	Widowed	Never Married	Informally Married
[1] CHILD:							1	2	3	4	5	6
[2] RESPONDENT:							1	2	3	4	5	6
[3]		1	2	1	2		1	2	3	4	5	6
[4]		1	2	1	2		1	2	3	4	5	6
[5]		1	2	1	2		1	2	3	4	5	6
[6]		1	2	1	2		1	2	3	4	5	6
[7]		1	2	1	2		1	2	3	4	5	6
[8]		1	2	1	2		1	2	3	4	5	6
[9]		1	2	1	2		1	2	3	4	5	6
[10]		1	2	1	2		1	2	3	4	5	6
[11]		1	2	1	2		1	2	3	4	5	6
[12]		1	2	1	2		1	2	3	4	5	6
[13]		1	2	1	2		1	2	3	4	5	6
[14]		1	2	1	2		1	2	3	4	5	6

ENTER NAMES ON HOUSEHOLD RECALL SHEET

TERMS FOR COLUMN B:

STEPMOTHER	FOSTER MOTHER	GRANDMOTHER	AUNT	SISTER	SISTER-IN-LAW
STEPFATHER	FOSTER FATHER	GRANDFATHER	UNCLE	BROTHER	
ADOPTED MOTHER	COUSIN	MOTHER'S COUSIN	HALF-BROTHER	STEP-BROTHER	BROTHER-IN-LAW
ADOPTED FATHER		FATHER'S COUSIN	HALF-SISTER	STEP-SISTER	

APPENDIX D – MEASURES TIME 3 YOUNG ADULT INTERVIEW (AGE 32)

Total Family Income for 1991

Employment Status

Marital Status

Age 32 Young Adult Interview/Questionnaire

What is your total family income for 1991?

a.	Less than $ 1,000 . . . 01	n.	$20,000 - $22,499 . . . 14
b.	$ 1,000 - $ 2,999 . . . 02	o.	$23,000 - $24,999 . . . 15
c.	$ 3,000 - $ 3,999 . . . 03	p.	$25,000 - $34,999 . . . 16
d.	$ 4,000 - $ 4,999 . . . 04	q.	$35,000 - $49,999 . . . 17
e.	$ 5,000 - $ 5,999 . . . 05	r.	$50,000 - $54,999 . . . 18
f.	$ 6,000 - $ 6,999 . . . 06	s.	$55,000 - $59,999 . . . 19
g.	$ 7,000 - $ 7,999 . . . 07	t.	$60,000 - $64,999 . . . 20
h.	$ 8,000 - $ 8,999 . . . 08	u.	$65,000 - $69,999 . . . 21
i.	$ 9,000 - $ 9,999 . . . 09	v.	$70,000 - $74,999 . . . 22
j.	$ 10,000 -$12,499 . . . 10	w.	$75,000 and over 23
k.	$ 12,500 -$14,999 . . . 11	(x.	REFUSED . . . . . 97)
l.	$ 15,000 -$17,499 . . . 12	(y.	DON'T KNOW . . . 98)
m.	$ 17,500 -$19,999 . . . 13		

Are you currently employed?

1. Working or temporarily not working 2. No

In the past week, were you employed full time?

1. Working Full Time 2. No

In the past week, were you employed part time?

1. Working Part Time 2. No

If you *did not* work in the past week, what was the reason?

1. Temporary illness, vacation, or strike 2. Not currently employed

Please select the highest grade you have completed.

0. Some Grade School
1. Some High School, No Diploma
2. GED
3. High School Diploma
4. Some College
5. College Degree

What is your current marital status?

1. Married
2. Separated
3. Divorced
4. Widowed
5. Living with Partner
6. Never Married