Competent Adolescents Despite Risk: Life Histories, Stress, and Coping Strategies of Resilient Teenage Mothers

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LOYOLA UNIVERSITY CHICAGO

COMPETENT ADOLESCENTS DESPITE RISK:
LIFE HISTORIES, STRESS, AND COPING STRATEGIES
OF RESILIENT TEENAGE MOTHERS

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

BY
ANNE P. MONTAGUE

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ABSTRACT

The processes by which high-risk individuals achieve and maintain competence were examined in this study. Chronic and acute stress, coping, and competence were studied among 46 pregnant and parenting female adolescents from disadvantaged backgrounds. Five chronic stress/support factors were coded from life-story interviews: consistent caregiver, family size, number of physical moves, parental education level, and outside, non-familial support. Acute stress was measured for positive and negative life events using a life-events checklist. The Ways of Coping measure yielded three dimensions of subjects' coping repertoires: complexity, effectiveness, and focus. Finally, competencies evaluated through self-report measures included: self-esteem, social support, and school enrollment status.

Findings supported both simple direct effects, and indirect, mediating and moderating effects among variables. In evaluating how stress and competence were related, parental education level and positive acute stress predicted competence; while negative acute stress was associated with poorer competence. Further, coping effectiveness was a mediator of this last relationship.
Stress and coping were found to be related in that positive acute stress was associated with greater problem-focus in the coping repertoire, and negative acute stress was related to less effective coping. Finally, an unexpected result was noted in that more family moves predicted greater problem-focused coping and greater coping effectiveness. This last relationship was further illuminated by compensatory/vulnerability analyses. These uncovered a moderating effect which suggested that the impact of family moves on coping depends on the level of acute stress the subject had been experiencing. Similarly, another moderating relationship was also observed in that family size impacted on coping focus depending on the level of acute stress experienced.

Finally, analyses of the relationships among the coping and competence variables in this study revealed only one direct effect: coping effectiveness was related to greater competence.

To further examine how stress, coping and competence may interact to help produce resilience, case studies of two invulnerable subjects were presented. Their differing pathways to resilience were discussed.
The study of the lives of remarkable people, whose early experiences of deprivation or tragedy unexpectedly are followed by considerable adult accomplishments, is nothing new to biographers or the inventors of fictional heros. Such life stories spark our imagination in their "against all odds" and "rags to riches" themes of overcoming fate. However, the study of individuals who succeed despite early trauma or impoverished beginnings has only recently been a focus of psychological research. Psychology has historically relied on deficit models and has focused on the etiologies and treatments of pathology. Until recently, psychological research has neglected the insights to be gained by examining the experiences of people who manage to love and work well in society, despite histories placing them in groups considered high-risk for social and individual pathology. The study of competent people who are or were members of high-risk groups has become a growing area of research under the headings of resilience and invulnerability.

This relatively new area of study in psychology has been created out of contributions from two historically
divergent lines of theory and empirical research. The examination of invulnerable people has been an observed by-product of developmental psychopathology risk research designed to follow the consequences of early risk over the life course. The predictive models of early risk and later pathology, while strong in many areas, just could not account for those subjects who seemed unaffected by early risk, or who even seemed to gather strength from such experiences. Secondly, the large body of research in the area of stress and coping risk research has highlighted the abilities of some subjects to overcome debilitating stressors and has suggested that some levels of stress may be beneficial.

These two research areas offer several models of how early stressors, coping and competence are related. Psychologists in both camps have examined simple direct models in which early stressors predicted later coping, or in which coping predicted later competence. In contrast, psychologists from each tradition have also examined coping by defining it as a mediating variable, with its effect on outcome varying depending on stress level.

For many developmental psychopathologists trained in psychoanalytic theory, their empirical model defines coping, and the related concept of defenses, as arising from one's early history and as leading to varying degrees of competence. Coping is seen as an outcome variable, predicted
by personal or environmental variables, or as a predictor variable of competence. Similarly, many researchers in behavioral medicine have also viewed coping as a style or trait of the individual which can predict health and other outcomes. In such a view, invulnerable subjects are those who, despite early or chronic stressors, manage to develop a personality style of healthy coping which leads to positive outcomes.

However, for other researchers in developmental psycho­pathology and in stress and coping, coping is viewed as mediating the predictive relationship between stressful personal and environmental factors and competence. The focus of this research is on the process by which various coping variables impact on the stress-competence relationship. Rather than viewing coping as a trait, these re­searchers focus on the situation-specific nature of coping and look for factors which interact with stress level to produce differences in outcomes. Invulnerables are high-risk subjects who compensate for their risk status or who employ protective measures to moderate the effects of stress.

This contrasting view of coping — as outcome or as mediator/moderator, has made integrating the findings about resiliency difficult. That the literature on resiliency draws on two divergent fields of research which differ greatly in their theoretical underpinnings also complicates
the process of summarizing findings. Because the histories and metapsychologies of these two broad areas of inquiry are so different, the exchange of theoretical concepts and empirical findings has been problematic. The relatively young field of developmental psychopathology is based on tenets of epidemiology and ego psychology. The older and broader field of stress and coping research is based on social science tenets and cognitive psychology. Language, methodology, and especially the types of questions being asked differ dramatically. However, an exchange between the two camps, and an integration of the models used in each, is now warranted if we are to create a new literature in resilience and invulnerability. Such a literature will view subjects at risk, who nonetheless function competently, not as unexpected and troublesome outliers of studies seeking to predict pathology, but rather, as the focus of research designs.

The concepts of resilience and invulnerability have long been overlooked as foci of research because of psychology's historical emphasis on pathology. Clinical psychology has overlooked cases in which deprived or traumatic events have less of an impact on later functioning than would be expected. People who overcome such odds rarely seek out therapy and case studies of such people have no scientific public forum. Child psychiatry and developmental psychopathology are based on the premise that early negative life
experiences produced later pathology (Rutter, 1985). Early in the stress and coping research field, experiments were designed to observe the negative effects of laboratory created stressors on subjects. Thus, deficit models formed the questions to be addressed and what significant findings would be reported. But as longitudinal developmental studies failed to predict the expected levels of pathology, and in vivo studies of stress observed many subjects relatively unaffected, researchers began to question their reliance on these deficit models.

A competence model of mental health, based on the abilities of persons under stress to cope with their lives, has gradually become the new paradigm under which resilience research has burgeoned. Masterpasqua (1989) argues convincingly that this competence approach represents a new paradigm shift throughout psychology. He finds that the competence paradigm "is not only more firmly rooted in contemporary theory and research but also provides a clearer health-based, psychological alternative to the traditional disease-based medical model" (Masterpasqua, 1989, p. 1366).

Another factor which has limited the study and reporting of observed cases of resilience or invulnerability is psychology's reliance on simplistic, linear models of causality. Because the science is young, there has been a tendency toward unidimensional predictor and outcome research. Complicating this further is Cohler's (1987)
observation: "assumptions of irreversibility and directionality in human development may be more a reflection of socially shared assumptions regarding the organization of [life history] stories than a generalization from research findings showing any cause and effect relationship between earlier events and later development" (p. 370). Yet it has been this predictive assumption that early events produce later pathology that has formed the basis of the research questions posed in early developmental psychopathology (Rutter, 1985) and in classical psychoanalytic clinical psychology. "The course of development may be more flexible and less linear or epigenetic than suggested" (Cohler, 1987, p. 384).

A third limitation in the study of resilience is methodological. The best work on competence despite high-risk has emerged from prospective, longitudinal developmental studies. As decades of data accumulated, these psychologists often were able to hypothesize based in part on the unexpected changes observed in some participants over their lifetimes. The ability to track personal and social influences over decades and to use many different sources of data within a multi-disciplinary team of assessors has created a rich base from which research on resilience can emerge. However, the tremendous costs and long-term commitment to such designs makes them unavailable for most researchers interested in resilience. Laboratory models,
standardized definitions and measures, single contact methods, and retrospective designs for the study of invulnerability need to be developed.

Finally, resilience and invulnerability have been a neglected area of study in psychology because of political and ethical considerations. The potentially negative consequences for high-risk groups of highlighting the outstanding coping abilities of a small percentage are serious. To suggest that some high-risk children have the potential to grow into healthy adults, even if presented with care as to how this might occur, could be distorted by some to a simplistic "pull themselves up by their bootstraps" excuse for denying services or underestimating need. To focus on the health and competence of groups in need of prevention and intervention services from a position of advocacy and as a proponent of increased support is a difficult balance to maintain.

But despite these limitations in studying resilience, the potential benefits of work in this area are substantial. Understanding the experiences of high-risk people who manage to function well offers tremendous insights for prevention and intervention. To study how invulnerables overcome adversity may help identify the naturally occurring compensatory and protective factors already present and available in the high-risk environment. Individual differences or person-factors identified among invulnerables offer clues
for skill training or remedial programs to address specific
deficits needing intervention. Many prevention and inter­
vention programs based on common sense and deficit models of
why high-risk populations fail may ignore those factors
which in the real experiences of invulnerables may protect
them or encourage their success. Cohler (1987) states:

...too often it is assumed that circumstances such as
poverty or family disorganization must inevitably lead
to increased suffering and turmoil; there is
insufficient understanding of the meaning of such
events for persons experiencing them, or recognition
that such events may also lead to renewed efforts to
master this adversity. (p. 364)

With the shift in psychology toward competence and
health models of development, the study of resilience will
more often be a goal of research in clinical and develop­
mental psychology and in social policy research. As has
been the case in health psychology, the shift toward
focusing on how people function well will have a tremendous
impact on prevention and intervention programs. With fewer
resources allocated to address the concerns of high-risk
groups, the need for specific, empirically well-supported
programs becomes even more pressing. Garmezy summarizes:

Vulnerables have long been the province of our mental
health disciplines; but prolonged neglect of the
'invulnerable' child -- the healthy child in an
unhealthy setting -- has provided us with a false sense of security in erecting prevention models that are founded more on values than on facts. ... these 'invulnerable' children remain the 'keepers of the dream.' Were we to study the forces that move such children to survival and to adaptation, the long range benefits to our society might be far more significant than are the many efforts to construct models of primary prevention to curtail the incidence of vulnerability. (In Werner & Smith, 1982, pg. xix)

Developmental Psychopathology Research

One of the two major lines of research leading to the development of a resilience or invulnerability literature has been developmental psychopathology research. Historically, this area is described as the study of populations presumed to be at risk to develop later pathology. Following the methods of epidemiology, the critical issues for risk examination are: what part of the population becomes ill?; what factors are associated with higher incidences of illness?; and how can illness be prevented? (Pellegrini, 1990).

Pellegrini (1990) distinguishes two major lines of risk research: genetic risk studies and life stress risk studies. The first is the domain of the developmental psychologist. Earliest work in the field includes a large collection of
studies on the children of schizophrenic and other mentally ill parents. Anthony (1987) describes the pioneering work of Bleuler, and his own early work in this area. Other studies considered risk research can be categorized within this genetic or life stress distinction. Those examining the impacts of genetic or early childhood risks include studies on: infant temperament, high-risk pregnancies and deliveries, prenatal or neonatal deprivation, behavioral teratogenesis (infants exposed to damaging environmental agents such as lead), separations and accidents in childhood, and studies of children born in poverty and war (Luthar, 1991, Garmezy & Masten, 1986, Compas, 1987; Garmezy & Rutter, 1983, Werner & Smith, 1982).

A common central concept in all developmental psychopathology risk research studies is a reliance on statistical analysis as defining the concepts studied. Garmezy and Masten (1986) state: "Risk factors imply that there are elements operative in persons or environments that result in a heightened probability for the subsequent development of a disease or disorder. Risk is a population concept associated with a heightened incidence rate" (p. 509). Thus, studies in developmental psychopathology historically avoid concepts which are non-statistical, such as coping. Compas (1987) states: "[These studies] have not emphasized what youngsters do to cope with stress. Instead, they have focused on the identification of stable, enduring
characteristics of resilient children and their environment that distinguish them from others who respond maladaptively to stress" (p. 398).

However, this reliance on measurement and statistical definitions is balanced by developmental psychopathology's equally strong basis in ego psychology. The study of the defenses as adaptive, begun by Anna Freud, and Erikson's focus on the adaptive qualities of the ego over the life-span, have strongly influenced many researchers (Felsman & Vaillant, 1987). Felsman and Vaillant (1987) also cite the longitudinal, psychoanalytically based, work of Murphy and Moriarty (1976) at the Menninger's clinic as serving as a "theoretical and methodological forerunner for much of the current research on invulnerability" (p. 302-03). The psychiatric and analytic training of researchers like Anthony, Murphy and Moriarty, and Werner and Smith, heavily color the methodology and findings of developmental psychopathology research. This emphasis, especially when coupled with the field's heavy reliance on statistical analysis for defining concepts, results in a tendency to see coping structurally; as a trait, in contrast to its application in the coping and stress literature (Lazarus & Folkman, 1984).

The theoretical bases of developmental psychopathology, therefore, have helped define a literature in which statistical analyses follow epidemiological models and the selection of measures follow ego psychological models.
Garmezy and Masten (1986) defines the "emerging science of developmental psychopathology" as: "a multidisciplinary perspective that has roots in the single case observations of astute clinicians and the aggregation of similar cases that characterizes large scale research programs" (p. 501-02). It is within this framework that the study of resilience and invulnerability emerged.

The methodology of developmental psychopathology follows from its historical and theoretical tenets. Werner and Smith (1982) characterize two types of studies in the area: longitudinal studies of normals over a decade or more, and prospective studies of high-risk children. Measures used to examine continuity or change in both types of studies have included clinical interview, psychological testing and questionnaires given to multiple raters for each subject. As researchers have embraced the competence model, new measures which are not geared toward the measurement of pathology have begun to be used. However, the debate about measurement and the definition of key concepts continues to make generalizing findings difficult.

Garmezy (1983) summarizes the common characteristics of resilience research in developmental psychopathology as:

(1) an emphasis on prospective developmental studies of children who (2) have been exposed to stressors of marked gravity (3) which can be accentuated by specific biological predispositions, familial and/or environ-
mental deprivations (4) typically associated with a heightened probability of present or future maladaptive outcomes but (5) which are not actualized in some children whose behavior instead is marked by patterns of behavioral adaptation and manifest competence. (p. 73)

In the developmental psychopathology literature, there are five series of studies which have most contributed to the field of resilience or invulnerability. Three of these, studies by Anthony, Murphy and Moriarty and Werner and their colleagues, are based primarily on direct models in which coping or defenses are viewed as arising from early stressors and as predicting later outcomes. The other two researchers, Garmezy and Rutter, who often publish together, use a different model of stress, coping and outcomes. They are interested in the mediating effects of personal and environmental factors on the stress-competence relationship, and reject the term "coping" and the use of traditional coping variables as unmeasurable.

E. James Anthony. The first of the five major series of studies in developmental psychopathology which are relevant to the study of invulnerables were conducted by E. James Anthony and his colleagues. Dahlin, Cederblad, Antonovsky and Hagnell (1990) call Anthony a pioneer of resilience research and cite his 1974 chapter "Children at Psychiatric Risk" as the first work published "that focuses
on phenomena that are hypothesized to increase the stress-resisting powers of children who grew up under extremely taxing conditions" (p. 228). Anthony's prospective studies of children of psychotic parents in the 1970s led him to pioneering work in the area of invulnerability. Anthony (1987) describes the process by which his prospective studies of children of psychotic parents led him to this new area of inquiry:

The clinical bias at work among our research group insured that the main thrust of inquiry was directed toward sickness... and that the mentally adjusted half of the sample was more or less taken for granted... That this half of the sample was growing up successfully did, however, arouse enough curiosity to induce us to investigate the basis for this. It was the third subsample (about 10% of the total group) that came as a surprise when the normal end of the spectrum of adjustment was explored with the new methodology. These children of psychotic parents were not simply escaping whatever genetic transmission destiny had in store for them, and not merely surviving the milieu of irrationality generated by psychotic parenting: they were apparently thriving under conditions that sophisticated observers judged to be highly detrimental. (p. 147)
Anthony and his colleagues' early observations led to the "serendipitous finding" (Anthony, 1987) of invulnerable children who thrived despite environments which were difficult. Anthony (1987) describes these resilient children as "characterized by sound normal defenses, a wide range of coping skills, many available competencies ... and an inherent robustness that enables [them] to generate a psychoimmunity" (p. 148). Anthony (1975) also echoes Bleuler in observing the ability to distance themselves from the parental illness as characteristic of these resilient children.

Anthony and his colleagues have employed a variety of methodologies in studying the children of mentally disturbed parents over the years. Researchers made observations in clinic and at home, and even lived with the families for a time (Anthony, 1987). Anthony also is well respected for his more theoretical analyses of invulnerable historical and mythical figures. His prototypical invulnerable is Hercules, whose ability to overcome odds and master his fate led Anthony to develop a set of research questions about invulnerability which remain valid today (Peck, 1987).

Anthony's theoretical work in the area of mastery or competence among his invulnerable subjects has also been a major contribution to the field. Based on his observations, Anthony distinguishes between two types of competence -- constructive and creative, and suggests invulnerables may
choose one or the other of these paths to resilience. Constructive competence is characterized by "doing"; by active problem solving and a practical task orientation. Creative competence, in contrast, suggests the adaptive use of fantasy, imagination and humor as a way to manage the less tangible aspects of a problematic environment. Anthony goes on to illuminate how each type of competence can be adaptive within the chaotic and psychotic homes of his young subjects (Anthony, 1987).

Lois Barclay Murphy and Alice Moriarty. A second series of studies which forms the foundation of the literature on resilience are those conducted by Lois Barclay Murphy and Alice Moriarty (1976). The "Coping Studies" in Topeka, Kansas were an interdisciplinary project of the Menninger Foundation begun in the 1950s. Subjects were normal infants from primarily middle class, conservative and religious families and were followed from infancy through adulthood. A comprehensive set of evaluations, including clinical observations and interviews, personality and intellectual testing, family and teacher reports, and medical/physical assessments, were administered at various ages. A series of books and articles, including many case studies, have been published arising from this data bank.

Murphy and Moriarty's longitudinal work has highlighted several concepts now seen as fundamental in the invulnerability and resilience literature. They make a strong
distinction between the psychoanalytic term "defense" and the broader term "coping." (Anthony, 1987). In profiling "good copers" Murphy and Moriarty include not only traditional defenses, but also cognitive skills and affective expressions. Also, the interactional parent-child environments of the good copers are richly detailed, implying that setting is another component of coping (Murphy & Moriarty, 1976). Finally, Murphy and Moriarty (1976) distinguish between two types of coping observed in their subjects over the years. Coping I is defined as coping with the external environment and is tied to autonomy, while Coping II is defined as coping to keep comfortable and maintain internal integration. This distinction between Coping I and II emphasizes the authors' focus beyond the traditional "defenses", which protect from internal threats, to a broader conceptualization of coping mechanisms used to master external conflicts.

Murphy and Moriarty are also credited in the resilience literature with introducing the concept of stress "dosing" (Cohler, 1987). Using case examples, Murphy and Moriarty report on subjects who chose their challenges carefully and in small steps in order to regulate themselves and exert control over the timing of stressors. In their book, Murphy and Moriarty (1976) also offer evidence from their studies for an "inoculation" effect of mastering stress. They report on subjects who seemed to become desensitized or
"used to" stress and showed remarkable strengths in coping after exposure to stressors.

Another major contribution from the work of Murphy and her colleagues in the Topeka Coping studies has been their emphasis on recovery. The authors have made careful observations of how their subjects, from infancy on, are able to re-group and re-integrate after a period of disruption. This return to equilibrium is the basis of Murphy and Moriarty's definition of resilience. They discuss resilience as: "the capacity to make a comeback after frustration, discouragement, defeat, as well as from weakness due to illness" (Murphy & Moriarty, 1976, p. 348). The ability of subjects to recover from stress, then, becomes central in their definition of good coping. Murphy and Moriarty (1976) define the "best copers" in their sample as those subjects "with the widest range of coping resources" (p. 337). Successful coping was:

reflected in freedom from the tendency to get stuck, bogged down or frozen into a self-defeating attitude, and as part of this, the development of a wide range of coping resources; ideas for problem solving growing out of a variety of experiences and observations of the coping efforts of others. (Murphy & Moriarty, 1976, p. 348)

A final contribution of the Topeka Coping Studies has been their eloquent and touching use of case studies to
illuminate the group's findings. Unlike some risk researchers whose discussions of group mean differences offer little insight into the subjective worlds of those being studied, Murphy and Moriarty include rich case histories to bring their findings to life. The methodology of the case study has greatly added to the literature on resilience by illustrating its clinical impact on real lives. Moriarty is especially gifted in grounding her theoretical concepts in the experiences of her subjects. In their later writings, both authors refer back to these stories using the pseudonyms adopted for individuals studied, and the reader familiar with their work easily recalls the story of Sam or Helen. One drawback to these clinical case studies, however, is their presentation within a psychoanalytic theoretical framework. Though offering a consistent and well-grounded examination of lives, the tenets and terminology of psychoanalytic psychology do not lend themselves well to the study of competence and resilience.

Emmy Werner. A third set of studies which serves as a foundation of the resilience literature are those by Emmy Werner and her colleagues (Werner, 1992). In their multidisciplinary, prospective, longitudinal study of all babies born on the Hawaiian Island of Kauai in 1955, Werner and her colleagues have helped develop the concepts of resilience and invulnerability. The subjects of the study were 698 infants, a third of which were thought to be at risk as a
cohort because many were exposed to poverty and other perinatal stressors. In a series of articles and books, Werner and others have reported on this group at ages one, two, ten, 18 and, most recently, culminating in the book Overcoming the Odds, (Werner & Smith, 1992) which is the follow-up when subjects were 32 years old.

Werner and Smith’s methodology in studying their at-risk sample has been to use a variety of psychological, medical, educational and demographic measures from multiple reporters and to measure over time, selecting ages at which their sample might be in transition. In presenting their findings, Werner and Smith (1982) "hope to present an effective balance between the statistical findings of our study that depict group trends and individual life histories that illustrate stability and change in human development" (p. 7). The successful attainment of this goal has been one of their most enduring methodological contributions to the resilience literature.

Werner (1989, 1992) summarizes the study’s major findings for the high-risk subset (n=201) defined as having experienced moderate to severe perinatal stress, as being born into poverty, and as living in a discordant family environment: two out of three of these high-risk children developed serious learning or behavior problems by age 10, or had delinquency or mental health problems, or teenage pregnancies by age 18. A quarter of this group had records
of multiple problems. However, most high-risk children who did develop problems in school or as adolescents had recovered somewhat by age 30. And even more surprising, one of three (n=72) of these high-risk children were invulnerables and "grew into competent young adults who loved well, played well, and expected well" (Werner, 1992, p. 263), without learning or behavioral problems in childhood or adolescence.

In examining the lives of these 72 invulnerables (high-risk, and high competence), Werner and her colleagues have contributed greatly to resilience research. Five clusters of protective factors have now been identified in the lives of high risk children who became competent adults (Werner, 1992; Werner & Smith, 1992). These are: (1) temperamental characteristics, (2) skills and values that supported their abilities, (3) characteristics and caregiving styles of parents, (4) the availability of supportive adults other than parents and (5) the opening of opportunities at major life transitions.

Based on findings about what protects high-risk children, Werner (1992) suggests a developmental trajectory common to invulnerables: early "easy" temperaments elicit positive responses and help create positive parent/child and teacher/child interactions. These help create greater autonomy and social maturity during the school years and connect the child with a wider network of nurturing adults.
Scholastic and/or social competence then leads to greater self-esteem which, in turn, leads to an increased ability to seek out better environments at times of transition. Implications for intervention and prevention programs follow from these observations and include the following as goals: the promotion of self-esteem and a sense of responsibility (especially in requiring school age children to help others), fostering and providing supportive relationships with adults outside the family, and supporting options available at times of transition, like community colleges, service in the armed forces and religious community involvement (Werner, 1992).

A final contribution to the field of resilience offered by the latest research of Werner and her colleagues are observations concerning gender differences among invaders. Werner (1989) finds gender differences in the balance between vulnerability and protective factors across the lifespan. Werner (1989) summarizes:

Boys are more vulnerable than girls in the first decade of life; females become more vulnerable in late adolescence, especially with the onset of early childbearing. Judging from our data, by the age of 30, the balance appears to be shifting back in favor of women. (p. 80)

At the 32 year follow-up, the resilient women showed greater sustained intimate relationships, more sources of support,
and better physical health when compared to resilient men (Werner, 1989).

Within the risk literature, the three series of studies by Anthony, Murphy and Moriarty, and Werner and their colleagues have formed a strong foundation for work in the area of resilience or invulnerability. These studies share common theoretical premises in ego psychology, epidemiology, and a focus on childhood experiences. Though their methodologies differ, they present a standard for resilience research of prospective, longitudinal designs using multiple measures, reporters, and data collection points. The emergence of resiliency as an unpredicted, but interesting finding in these studies, has led each set of researchers to focus more directly on invulnerability in their primary samples and in separate studies.

The basic model of Anthony, Murphy and Moriarty and Werner, et al.'s research questions is linear and direct, with early stressors leading to the development of defenses and coping styles, which in turn lead to adjustment as measured by outcome variables. Because of the longitudinal nature of the research, such a direct analysis seems warranted given that historically earlier events obviously precede later functioning. However, two other researchers in the area of developmental psychopathology have adapted the model to include an interaction effect. Garmezy and Rutter (1983) have rejected the concepts of coping and
defenses as not measurable and have instead looked to identify other personal and environmental factors which mediate or moderate the negative impact of stress on competence.

Norman Garmezy. The fourth set of studies which underlie resilience research from the developmental psychopathology literature and which employ a mediation model are those of Norman Garmezy and his colleagues (Garmezy, 1983, 1991). The best known of these are Garmezy's works on competent black children living in poverty. Garmezy and his colleagues used a very different research methodology, conducting a literature survey and then examining common factors associated with competent children in those studies. These include: strong social skills, positive self-esteem, internal locus of control, ability to control impulses, home environments which were less cluttered and crowded, neater and with more books, parental support of education, well defined parental roles, more responsibilities in the home, and the presence of other adults with whom the child identified. Garmezy summaries these attributes as forming a triad of protective factors: (1) dispositional attributes of the child, (2) family cohesion and warmth, and (3) support figures in the environment and schools (Garmezy, 1983).

Garmezy is well known for his literature reviews in the area of poverty and its consequences. His central findings are that the majority of children living in poverty are well
adjusted to their life circumstances (Cohler, 1987) and do not appear to differ from their more advantaged counterparts on several measures of competence (Garmezy & Neuchterlein, 1972). Garmezy also reviews studies addressing the issue of transgenerational poverty and finds little support for its occurrence (Garmezy, 1991). He summarizes Rutter & Madge's 1976 work in Garmezy (1991):

...the authors report that half of the children living under conditions of disadvantage do not repeat that pattern in their own adult lives. Conversely, others born under more provident circumstances do move downward into poverty in their adulthood. Studies over three generations further weakens the case for intergenerational continuity. (p. 419)

Another example cited by Garmezy of adult escape from childhood poverty is Long and Vaillant's 1984 study (in Garmezy, 1991) of inner-city men raised in poverty. Most of these men were settled in adulthood in the middle class with stable employment and family lives. "Thus, the inevitability of the transmission of a parental chaotic lifestyle was found wanting as either a necessary or a sufficient condition for predicting later negative life status" (p. 420).

Another well known series of studies by Garmezy and his associates are those arising from Project Competence, a University of Minnesota research program examining children at risk for psychopathology. In studying these children
presumed to be genetically vulnerable to major psycho-pathology, a focus on stress-resistant children was added in the late 1970s. This addition was possible because although the initial design was toward predicting pathology, the search for competence was central. The study also purposefully rejected the "questionable methods to define 'coping' in favor of the more reliable measures that were available in evaluating competence; the assumption being that a manifestly competent child was a good coper" (Garmezy & Masten, 1986, p. 512).

Methodologically, these studies are similar to those of Murphy and Moriarty or Werner. The Project is a longitudinal, prospective design using multiple measurements, by multiple raters and observers, at various ages. Competence was operationalized as effective functioning of the child at school and at home. A stress-resilient child was defined as a child "who maintains competence despite exposure to adverse stressful events" (Garmezy & Masten, 1986, p. 513). Follow-up data on these children as adolescents are being collected and findings will be reported soon. Initial reports from Project Competence suggest that person factors (sex, intelligence) and environmental factors (parenting qualities, SES and family cohesion) might not only predict competence, but also mediate the effects of stressful events on competence (Garmezy & Masten, 1986). This has led to a distinction between compensatory factors, which are directly
related to competence, and protective/vulnerability factors, which interact with stress in influencing competence (Luthar, 1991).

Michael Rutter. The fifth, and final, set of developmental psychopathology studies which are the basis of resilience research are the epidemiological studies of Michael Rutter (e.g. 1987). Like Garmezy, with whom he has published extensively, Rutter employs a mediational model in his empirical work on stress and its relationship to competence. In the early 1970's, Rutter and his colleagues (in Garmezy & Rutter, 1983) looked at two very different English communities; the Isle of Wight and an inner London borough. Increased incidence of psychiatric disorders in children was found to be related to six familial variables: marital discord, low SES, large family size with overcrowding, criminal records in parent(s), maternal psychiatric disorder and admission of the child into the care of local authority. Rutter's study contributed to resilience research by also reporting on the "protective factors" observed which seemed to lessen a child's risk. Garmezy (Garmezy & Rutter, 1983) groups these into three categories: positive personality factors, supportive family factors, and the presence of an external social agency functioning as an additional support.

Rutter's later work on the lives of institution-reared women further illuminates the relationship of early chronic
stress and later outcomes; negative versus positive or resilient. Rutter (1985) describes the institutionally raised women he studied as having a substantially worse outcome for parenting problems than controls. However, his statistical analyses show a complex relationship between adverse childhood experiences and adult disorder. Rutter (1985) found that "in considerable part, the poor adult outcome appeared to be a function of the women's dis-harmonious marriages to deviant men....the fact that they made such marriages in the first place stemmed from childhood adversities. The immediate protective factor, then, was a good marital relationship" (p. 604). Because of his emphasis on competence, Rutter then goes on to examine the factors enabling some women to chose non-deviant men and create good marriages despite their early histories. Rutter's finding that some form of good experience at school (usually non-academic) influenced their ability to plan about work and about a marriage partner. "The inference is that the experience of success in one arena of life led to enhanced self-esteem and a feeling of self-efficacy, enabling [the women] to cope more successfully with the subsequent life challenges" (Rutter, 1985, p. 604).

Rutter and his colleagues have also examined the impact of parental mental disorder on children. He finds the main risk factor for these children to be family discord, especially when involving the child directly in the hostility
or quarrelling (Rutter & Quinton, 1984). Again, however, it is Rutter's ability to suggest protective factors which characterize his work as forming a foundation for the study of resilience. In the case of a child with a psychiatrically ill parent, if there is one healthy parent with whom the child is well related, if the child is female, if the child is the opposite gender of the affected parent, and if the child has an 'easy' temperament; the negative impact of the ill parent is moderated. In fact, an ill parent may be health enhancing if the child is able to manage the added stress and assume a rewarding, helpful role (Rutter, 1985).

In detailing his epidemiological work on the impact of early life experiences and later adult problems, Rutter has illuminated many of the protective factors which underlie resilience. He summarizes his findings in this area (Rutter 1985):

Resilience seems to involve several related elements. Firstly, a sense of self esteem and self confidence. Secondly, a belief in one's own self efficacy and ability to deal with change and adaptation. And thirdly, a repertoire of social problem solving approaches. (p. 607)

The developmental psychopathology risk literature on factors moderating the impact of stress on competence can be summarized as follows. There appears to be a triad of factors which arise across studies that serve to lessen the
harmful effects of stress and disadvantage. Garmezy (1985) has labeled these: (1) dispositional attributes of the child, (2) family attributes of cohesion and warmth, and (3) the availability and use of external supports by the child and parents. Among dispositional factors identified by Luthar and Zigler (1991) are intellectual ability, infant temperament, locus of control, sense of humor, social skills, and gender. Luthar and Zigler (1991) find evidence for the following family factors as mediators of the effects of stress: familial harmony, shared family values, maternal competence in parenting, good relationship with at least one parent, and lack of child abuse. Finally, the use of social supports outside the family include the choice of resilient models, a network of informal relationships including peers and older friends, religious affiliation and participation, and positive school experiences, though not necessarily academic (Luthar & Zigler, 1991).

Rutter (1987) and Garmezy and Tellegen (1984) have explored the nature of these mediating factors to distinguish between those which compensate for the harmful affects of stress, and those which interact with stress in predicting competence. An example of a compensatory mediating factor is found in Rutter’s (1985) suggestion that self-esteem heightens one’s ability to face life challenges, regardless of stress level. Intelligence, on the other hand, seems to be both protective and to increase vulner-
ability under differing levels of stress. Luthar (1991) found in her study of adolescents that on some measures of competence, highly intelligent subjects scored well under low stress, but very poorly under high stress. Further, these highly intelligent teens under high stress were less competent in some areas than were low intelligence teens under high stress. Luthar (1991) suggests that more intelligent children are more sensitive to their environments and thus are more susceptible to stressors than are children who are less intelligent.

The distinction between compensatory and protective/vulnerability mediating factors seems promising for future research in stress, competence and resilience. However, Rutter differs from many risk researchers in that he calls for an emphasis on the processes by which mediating factors serve to help or hinder. According to Rutter (1987), mediating factors:

...are of very limited value as a means of finding new approaches to prevention. Instead of searching for broadly based protective factors, we need to focus on protective mechanisms and processes. That is, we need to ask why and how some individuals manage to maintain high self-esteem and self-efficacy in spite of facing the same adversities that lead other people to give up and lose hope... The search is not for broadly defined protective factors, but rather, for the developmental
and situational mechanisms involved in protective processes. (p. 317)

Contributions of Developmental Psychopathology

The major findings of developmental psychopathology researchers which most influence the growing literature in resiliency include the use of two competing models of how stress, coping and competence are related, the choice of life transitions as key points of assessment, and the observation of flexibility in coping as characteristic of invulnerables. These three major contributions, especially when examined using the new competence models of development, suggest exciting directions for future research.

The first major contribution to resiliency from the developmental psychopathology tradition are the two basic models relating early stress, coping and competence. The existence of two models begs the theoretical question of whether these factors are related chronologically with one predicting the next, as assumed by much of the longitudinal research, or whether some factors should be viewed as compensatory or as protective/vulnerable, and thus as interacting with stress to influence competence. The choice of model has important consequences for how data are collected and analyzed.

To further complicate the interaction model, Rutter's view of mediating factors as processes is contrary to the
statistically defined measures used by most risk researchers. Rutter's definition of mediating processes challenges risk researchers to shift their attention away from the search for long-standing personality traits, as in the analytic tradition, toward an examination of coping at the point when life courses change. "Many vulnerability or protective processes concern key turning points in people's lives, rather than long-standing attributes or experiences as such ... the turning point arises because what happens then determines the direction of trajectory for years to follow" (Rutter, 1987, p. 318). It is this attention to life transitions as the critical period in which to study resilience which is the second major contribution of developmental psychopathology research to the resilience or invulnerability literature.

The selection of assessment points during the lifespan for many researchers suggests that transitions are especially interesting in studying resilience. Werner and her colleagues specifically targeted their group at ages 18 and 32 in order to tap this potential. In fact, Werner (1992) and Werner and Smith (1992) list "the opening of opportunities at major life transitions" as one of the five protective factor clusters identified in their longitudinal study. Their analyses of life transition periods has also led to findings of gender differences across different life periods (Werner, 1992).
Bertram Cohler (1987) has been especially interested in the impact of life transitions on invulnerability. He cites Zubin's work (Zubin & Spring, 1977, in Cohler, 1987) on vulnerability to schizophrenia as exemplary of constitutional vulnerability interacting with particular life events to produce episodic disturbances, suggesting a similar interaction for episodic resilience. How do personal characteristics interact with environment to create smooth and resilient life transitions for some, and chaotic and pathological transitions for others? Cohler feels the most interesting questions in resiliency research are about the changes in coping associated with particular points in the course of one's life. Cohler's proposed methodology to evaluate these, however, differs from traditional risk research. Cohler suggests the use of the personal narrative, or life story, of the invulnerable as a tool to examine resilience (Cohler, 1987).

The last major contribution of developmental psychopathology research to the resiliency literature is the common finding or supposition that resilient subjects have a wide range of coping strategies available to them. A large, flexible repertoire of coping options seems to be a defining characteristic of invulnerables. This wider range of coping options may set invulnerables apart from their peers who succumb to stress. Rutter (1987) includes a wide range of social problem solving approaches in his definition of a
resilient child or adult (p. 607). Murphy and Moriarty's (1976) definition of their "best copers" were "those with the widest range of coping resources... developed from a variety of personal experience and observations of other people's coping" (p. 337, 348). Cohler (1987) adds: "children who remain resilient are able to use flexible coping strategies in overcoming adversity, rather than reacting in a brittle and rigid manner" (p. 391).

This finding of a flexible, wide range of coping options among resilient children is especially important when looking at high-risk environments. Seifer and Sameroff (1987) quote Kohn's 1973 paper about SES differences in the rate of mental illness:

The constricted conditions of life experienced by people of lower social class position fosters conceptions of social reality so limited and so rigid as to impair people's ability to deal resourcefully with the problematic and the stressful. (In Seifer & Sameroff, 1987, p. 56)

If Kohn's analyses are valid, the extra stressors of disadvantaged environments should foster a limited and rigid set of coping options among children raised in them. It may be the ability to create a wide, flexible, repertoire of coping strategies despite these environments which distinguishes invulnerables.
Limitations of Developmental Psychopathology

Despite these contributions, there are several limitations of developmental psychopathology research that need to be addressed in further research. The first of these are researchers' theoretical bases of ego psychology and epidemiology. Analytic models, even when broadened by newer theories, do not lend themselves well to the study of competence. The metapsychology of defenses and childhood experiences as predictive of adult pathology does not allow for exploratory research in the field of resilience. Secondly, epidemiology's basis in correlational research, in which relationships are discovered between populations and incidence rates of illness, limits what can be discovered about causality and the processes which contribute to resilience. The subjective experiences of individual subjects is lost.

These two theoretical foundations suggest that resilience is itself a trait or enduring personality characteristic of the subject, rather than a condition observable at any given time during the life course. This use of the term resilience as a label of a personality trait by developmental psychopathologists has encouraged others in the field to use the term "invulnerability" instead. Musick, Stott, Spencer, Goldman and Cohler (1987) view the problem with the developmental psychopathology research tradition as follows:
...It is statistical rather than psychological in nature, and more recent investigators have preferred to use the concept of "vulnerability" ... The concept of vulnerability makes no assumptions about the "causes" of ... impairment in coping ability, but only asserts that such impairment exists. (p. 230)

Another limitation of developmental psychopathology research is definitional. The choice of measurement instrument to operationalize complex concepts creates problems of validity and interpretation. Fisher, Kokes, Cole, Perkins and Wynne (1987) note this difficulty with the measurement of competence. When single indices of competence are used, the complexity of adequate adjustment is lost. However, multiple criteria or raters of competence introduce the question, for example, of whether invulnerables can be well related to others but failing in school. Fisher, et al. (1987) state: "When multiple criteria are used to define competent and incompetent functioning so that environmental or parental factors can be identified, inconsistencies and discrepancies develop" (p. 222). Multiple criteria of competence create statistical problems as well, as one reduces sample size to create combined outcome variables.

Still another problem with the concept of competence in developmental psychopathology is that some researchers consider aspects of competence, such as good grades, and skills in sports or the arts, as protective factors against
psychopathology (Rae-Grant, Thomas, Offord & Boyle 1989). Thus, competence is evaluated and understood as a mediating variable, rather than an outcome. In a tradition in which the "predominant focus is on the ecologies of family disorganization and developmental disarray," (Bronfrenbrenner, 1986, p. 725), using competence as the outcome measure of interest has created a great deal of confusion.

There are other definitional problems with the concepts used to determine outcome in developmental psychopathology research. These have been raised in critiques of this literature as it relates to invulnerability. Of these, the confounding of coping with outcome is the most obvious. Reliance on analytic and ego psychological hierarchies of defenses has introduced an evaluative test of coping strategies in which some are seen as superior and others as more primitive. Lazarus's (1985) discussion of denial is a classic example of how traditional defenses may be adaptive or maladaptive depending on their context and goals. "No one strategy [should be] considered inherently better than any other. The goodness (efficacy, appropriateness) of a strategy is determined only by its effects in a given encounter and its effects in the long run" (Lazarus & Folkman, 1984, p. 134). Thus, the use of coping strategies falling at the more primitive, less adaptive end of the defensive continuum has been associated with, or labeled as, a less positive outcome. This use of "inferior" coping
strategies to define the less competent subjects, therefore, is a confounding of coping with outcome.

A final limitation of research in developmental psychopathology in generating future studies on resilience or invulnerability is methodological. The standard of the field is longitudinal, prospective designs with multiple contacts over decades. Statistical analyses of group trends are then combined with detailed case history material to report findings. While the ideal, such projects are not available to most researchers in resilience research. Further, until more is discovered about invulnerability and measurement standards set, it is difficult to justify such a commitment of resources. At this stage of the literature, more exploratory work is needed.

**Stress and Coping Research**

Studies in stress and coping make up the second research tradition which has helped define the resilience literature. Though few researchers in this broad field specifically address invulnerability, the area provides many concepts, methodologies and findings which are relevant to resilience. Studies of life stressors and their impact, along with genetic risk studies, are the two major lines of risk research (Pellegrini, 1990). And it is those at risk who remain competent who are the subjects of interest to researchers of invulnerability.
Stress and coping research has historically been defined broadly as an examination of the relationships between life stressors (naturally occurring or artificially created), coping, and various outcomes. The central questions of stress and coping research have included: what are the functions of coping strategies?; do individuals maintain a consistent coping style across various stressors or is coping situation specific?; and are some types of coping more often associated with positive outcomes than are others? (Compas, 1987; Lazarus & Folkman, 1984). Much of the work in this field thus far has been focused on defining the terms involved and creating measures and methodologies to explore crucial relationships. It is this honing of the concepts involved, and the standardization of the measures used that offers the most immediate resources for the researcher interested in resilience.

Definitional clarity has been a central issue for researchers of stress and coping. Because the terms are used in non-scientific, common-sense discussions, it becomes necessary to define the limits and context of "stress" and "coping" in each study. For example, the concept of stress, in psychology as in the vernacular, can refer to either an environmental event (a stimulus), or an internal state of disequilibrium (a response). Further, Lazarus and Folkman (1984) add that stress can also be viewed as the interaction between the stimulus and the response: "Psychological stress
is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well being" (p. 19). This definition, despite its complexity, has emerged as a standard in the field. It is this growing convergence of different views toward a common use of the term which offers hope for Garmezy and Masten (1986) who said: "Stress remains a discomforting construct for precision-minded researchers" (p. 507).

Similarly, coping has been defined very differently by different researchers. We have already seen how some developmental psychopathology researchers equate "good coping" with competence; making it an outcome in their designs. These same researchers have also treated coping structurally, as a style or trait of the person studied, and therefore as a dispositional mediating factor. In addition, animal researchers and others define coping as including instinctive, reflexive, and/or automatic responses. Others suggest that effortful or purposeful reactions alone be considered coping. Again, Lazarus and Folkman's (1984) definition of coping has become a standard for many researchers in the stress and coping tradition (Compas, 1987). They write: "We define coping as constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman,
These definitions of "stress" and "coping" also exemplify the metapsychological underpinnings of this research. The traditions of social science and of cognitive psychology are reflected in the training and applied work of most stress and coping researchers. Social science influences on stress and coping research includes the use of experimental designs using control groups in the laboratory and in vivo. This contrasts with developmental psychopathology's methodology in which the issue of inadequate control groups has been criticized (Fisher, et al., 1987). Stress and coping studies also often include sociological, economic and ethnic variables, and address questions about their effects on coping. Factors of the environment and the specific qualities of the stressor are important variables in stress and coping research. Finally, animal models of response to stress have also been empirically evaluated in human studies and are viewed as relevant to human coping (Garber & Seligman, 1980).

Cognitive psychology's influence on research in stress and coping is apparent in the way these and other terms are conceptualized, as well as researchers' attention to their subjects' thoughts and beliefs. Attributions, appraisals, and other evaluative judgments made by the subject of natural and experimentally created stressors form an entire literature. Lazarus and Folkman (1984) have made primary
and secondary appraisals a foundation of their model of coping. Self-report measures and subjective indices of stress, of coping and of competence are the rule in this literature. The subjective experience and report of subjects is viewed as critical to understanding these variables in the real world.

These bases in social science and cognitive psychology have also contributed to the methodologies used by stress and coping researchers. Experimental designs are the method of choice, with laboratory studies often testing the findings of in-vivo work. Given the emphasis on the internal worlds of subjects, coping and stress research is subjective, with measures being primarily self-report. Measurement construction, and validity and reliability testing have been important areas of research (Carver, Scheier & Weintraub, 1989).

Historically, the methodologies of stress and coping research have tested linear models. Lazarus and Folkman (1984) summarize this antecedent–consequent approach as asking two questions: does the stressor have an impact on the person? and what personality variables mediate the stressful or damaging effects of the environment? (p. 291 and 292). Their criticisms of these S – R or S – O – R models is that they are unidirectional and assume the person and the environment are static. Lazarus and Folkman (1984) suggest instead a transactional model which is dynamic,
mutually reciprocal, and bidirectional (p. 293). The process or "the unfolding or flow of events" becomes the focus of study. This coping process involves: (1) what the person actually does, (2) in a specific context and (3) how that changes over times or events (Lazarus & Folkman, 1984, p. 297).

There are four specific areas of study within the stress and coping literature with findings that are especially relevant to the researcher interested in invulnerability. The first two of these are studies in behavioral medicine and employ models of stress, coping and outcome in which the factors are thought to directly predict one another. The third research area is in life events and also uses a directly predictive model. However, the last research area of interest in stress and coping uses a much different model. Lazarus and his colleagues' transactional model, mentioned above, suggests a more complex way of examining stress, coping and competence.

**Hardiness.** The relationship between stress and physical health has long been the subject of correlational research and clinical lore. Research has uncovered significant relationships between life stress and the following conditions: depression, drug abuse, myocardial infarction and cerebral vascular accident, hypertension and other cardiovascular diseases, increased susceptibility to infection, pregnancy complications, bronchial asthma, gastric
ulcers, hyperthyroidism, diabetes and cancer (Sorensen, 1993; Dohrenwend & Dohrenwend, 1984). These correlations, however, tend to be relatively small, accounting for only four to nine percent of the variance (Schroeder & Costa, 1984).

Thus, the findings of behavioral medicine research suggest a consistent, though small, statistically significant relationship between life stress (as measured) and emotional and physical illness. Again, the prediction of pathology is the focus of most of the research. However, there is an area of behavioral medicine which discards this deficit model and instead offers a health model. This area of particular relevance to the field of invulnerability is research on hardiness (Kobasa, 1979).

Kobasa and her colleagues define the psychologically hardy individual as having a personality which makes them less likely than non-hardy individuals to fall ill as a consequence of stressful life events. The hardy personality includes: commitment (tendency to involve oneself in whatever one is doing or encounters), challenge (belief that change rather than stability is normal in life and leads to growth), and perceived control (tendency to feel and act as if one is influential rather than helpless in life) (Hull, Van Treuren, & Virnelli, 1987). These traits, and the attitudes which underlie them, render hardy people stress-resistant. Hardiness is seen as a mediating variable or
buffer which "mitigates the potential unhealthy effects of stress and prevents the organismic strain that often leads to illness" (Gentry & Kobasa, 1984, p. 99).

Hull, Van Treuren and Virnelli (1987) review Kobasa and her colleagues' studies and summarize key findings. Hardiness predicts both concurrent and future health, and hardiness remains a significant predictor of health even when the effects of prior illness, Type A behavior pattern, and social support are statistically controlled (Hull, Van Treuren & Virnelli, 1987). Research methodology for these and subsequent studies on hardiness has included both retrospective and prospective designs. There are generally three measures or sets of measures completed by subjects in these studies; one assessing hardiness, a life-events checklist to assess life stress, and a report of illness. Subjects are divided into hardy and non-hardy groups and a comparison of illness history under high stress forms the basis of analysis.

The literature on hardiness has more recently failed to replicate Kobasa's earlier finding that hardiness predicts resistance to illness (Hull, Van Treuren & Virnelli, 1987, Allred & Smith, 1989). Critiques of the hardiness literature focus on the areas of measurement and whether hardiness has direct or buffering effects on the management of stress. This latter question is especially important given the finding that hardy individuals perceive life events as
more positive and more controllable than do their non-hardy counterparts (Rhodewalt & Agustsdottir, 1984, Rhodewalt & Zone, 1989) and that the outcome variable, illness, is self-reported and subject to these same appraisal differences (Hull, Van Treuren & Virnelli, 1987). The concept of hardiness, and especially its recent critiques, offers much to the researcher interested in invulnerability. Can the components of hardiness (commitment, challenge and control) which seem related to positive physical health despite stress help explain broader invulnerability to stress? Further, what seems to be emerging from the hardiness literature is a recognition that hardy and non-hardy people differ in their appraisals of stressful events and the coping strategies they use to confront these events. Do invulnerables also demonstrate appraisals of stressful events as more positive and as under greater personal control? Kobasa (1982) suggests that the subcomponents of hardiness may decrease the use of ineffective and regressive coping strategies. Is this also a hallmark of invulnerability?

This call to evaluate the appraisals and coping strategies of hardy and non-hardy people in future research, however, is complicated because the measurement of hardiness as a personality trait includes aspects of particular coping strategies as a part of its definition. Perhaps hardiness, like invulnerability, should be viewed not as an enduring
personality trait, but as the skillful employment of coping strategies in response to stresses, in this case leading to better physical health. It is the nature of this ability to cope, and of the processes through which it is made available to the individual, that remains to be understood.

This distinction between hardiness as a trait, and hardiness as a specific set of strategies in response to a particular stressor, highlights a long-standing conceptual disagreement in the coping and stress literature. The debate as to whether coping is best understood as dispositional or situational remains ongoing. The research literature which assumes coping is dispositional is large and diverse. This work on coping styles or traits is the second major area in the coping and stress literature which has implications for research into invulnerability.

Type A coping style. The most widely known series of studies on coping style are those assessing the Type A coronary-prone behavior pattern and its impact. Matthews (1982) and her colleagues (Matthews, Glass, Rosenman & Bortner, 1977) have expanded upon the initial work of Friedman and Rosenman in this area. Their research has examined the interaction of the Type A coronary-prone behavior pattern with uncontrollable stressful events and has found the following three major behavioral components of Pattern A: competitive achievement striving, a sense of time urgency or impatience, and aggressiveness or hostility
Much of the research in Type A behavior continues to focus on its relationship to heart disease and other physical conditions. However, there has also been a broadening of research questions, especially in examining children, to include study of the antecedents of Type A behaviors (e.g., familial influences, temperament) and looking at other outcomes (e.g., control, empathy) (Compas, 1987).

Type A research may offer clues as to how invulnerables manage to handle their stressful lives without sacrificing competence. Research has shown that Type A’s distinctive coping style is to exert great effort to control the situation when initially confronted by an uncontrollable event, and then to blame themselves when these efforts meet with repeated failure. Finally, Type A’s give up responding (Matthews & Glass, 1984). If invulnerables can be conceptualized as not being Type A’s, then perhaps they do not follow this coping scenario when confronted by another life stress.

Of special interest to researchers interested in invulnerability is this less explored area inherent in Type A research: the Type B or the behavior pattern that does not make one vulnerable to coronary heart disease. Matthews and Glass (1984) write:

Although individuals who exhibit pattern A behavior are called Type A’s, whereas those who do not are called
Type B's, in actuality, Type A is defined as a continuum ranging from extreme A to extreme B responses. A full description of the Type A side of the continuum has been developed, whereas the only available description of Type B is the relative absence of Type A. It seems obvious, however, that Type B is not merely the absence of a certain style of interacting with life's challenges and dilemmas. It probably represents a distinctly different set of coping responses... While A's are struggling to maintain control over their environments, B's are not simply struggling less, they appear to be coping in a different manner. (p. 168-169)

This typifies the problem in much of the coping style research for those interested in invulnerability: the negative trait associated with negative outcomes is the standard; and its absence defines the style potentially associated with invulnerability.

Since we know little about Type B's, assumptions about whether invulnerables share their coping patterns is problematic. We might assume Type B's are less achievement oriented, feel less time urgency and are less aggressive. But is their coping more flexible? Do they assess stresses less rigidly and vary the amount of effort they exert for any particular stressor? Do they not get discouraged at failure? Coping styles research limits these paths of
inquiry for invulnerability researchers in that viewing coping as a personality trait limits the study of coping as process.

Lazarus and Folkman's (1984) cognitive-phenomenological approach to coping views coping as fluid and complex with great variability in how individuals cope with specific situations across time. "There is both stability and change in coping" (Lazarus & Folkman, 1984, p. 130). Trait models of coping are attractive in their linear, predictive simplicity; however, treating coping as static is viewed as limited by many stress and coping researchers following Lazarus' models:

Coping is increasingly viewed as a process, rather than an event or trait. That is, coping is studied best by methods that explore the patterns or a person's continued appraisals, reappraisals, and actual responses in particular contexts, rather than isolated hypothetical responses of what he or she might do in a given situation. Thus, although particular coping styles have been examined, the effectiveness of coping seems to depend more on repertoire than on style. (Sorensen, 1993, p. 14)

If Type B's differ from Type A's in how they cope with situations in terms of coping repertoire, flexibility or complexity, we can not discover how by using the traditional Type A coping style paradigm.
Life events research. In viewing coping as situational, rather than as dispositional, another issue arises. What types of situations are stressful and illuminating in examining coping? This question of how to operationalize stress is again a subject of considerable disagreement in the field. One option commonly adopted by stress and coping researchers has been use of life events checklists. This third broad area of research in the coping and stress literature offers important findings for studying invulnerability. But, as with coping style research, its basic assumptions about the nature of stress limits its application to invulnerability research.

As summarized by Dohrenwend and Dohrenwends' in their 1984 book on life events' impact, life event checklist research has burgeoned. Scores on self-reported checklists of life changes have been used extensively and have led to important findings about the impact of life events on physical illness (summarized above) and mental health. Using life event checklists as the measure of stress in research has resulted in consistent and stable, though small, correlations between stress and many adjustment measures. In addition, undesirable, adverse or harmful, and unexpected or "accidental" life events, as well as those over which the person feels little sense of control, have been isolated as most damaging to physical and mental health (Cohler, 1987). Holmes and Rahe's 1967 Social Readjustment
Rating Scale is cited as the first of many checklists widely available to researchers (Dohrenwend & Dohrenwend, 1984).

Despite useful findings, criticisms of life events checklists are numerous. Central in the development and use of these measures are issues of what weights each life event listed should be assigned in summing a total life stress score, ethnic and cultural differences in the meaning of life events, the accuracy of subjective reporting of life events on checklists, and the contextual nature of life events and their impact (Dohrenwend & Dohrenwend, 1984). Critiques in addition to these issues include: doubts about the psychological meaning of summated scores on the checklists, failure to take the subjective meaning of events into account, idiosyncratic individual and group differences (especially when using psychiatric populations including depressed and psychotic subjects), and the inclusion of diverse types of life changes such as normative transitions, and unexpected accidents (Cohler, 1987). Schroeder & Costa (1984) provide evidence that conventional life events measures include items that overlap with, and are significantly related to, the outcome criterion of many studies -- physical health. Brown (1984) sums up much of this criticism in his observation that "most life-event research has been based on a dictionary approach to meaning" (p. 187). Lazarus and Folkman (1984) go further, calling life events research: "a superficial examination of external
social demands without an equal concern for psychological dynamics that give them personal meaning" (p. 238).

Addressing and exploring the limitations of life events checklists and life events research has led to several important developments in the field. Instruments have been reworked to include weights on items and to allow measurement of subjective meaning and impact. Additionally, attention to more minor, less dramatic life events and their impact has increased. Daily hassles and uplifts and how subjects cope with these lesser irritations and joys of everyday life has offered new directions for research as well as a chance to replicate what is already known about stress and adjustment (Kanner, Coyne, Schaefer, & Lazarus, 1981).

The researcher interested in invulnerability can find helpful guidelines for future research in both the findings and the critiques of life event research. Clearly, well-designed life event checklist measures can be a useful indicator of stress and are associated with many types of adaptation and adjustment. And the limitations of life events checklists raise important issues as to the nature of stress and the importance of its subjective basis. The subjective appraisal and experience of stress by invulnerable people, therefore, becomes a critical variable to consider in searching for the process by which invulnerables remain competent.
These considerations of life events research return us to the initial question: what types of life events are stressful and illuminating in studying stress, coping and adaptation? Pearlin (1991) proposes this distinction among "life strain" events: (1) daily, enduring, slow to change problems, (2) predictable, regular events of the life cycle (marriage, retirement) and (3) unscheduled, usually undesirable, eruptive events (illness, divorce or premature death of a loved one). Cohler (1987) echoes these with his topology: normative transitions across the life course, changes due to unexpected and usually adverse accidents of fate, and changes encountered in the performance of major life roles, such as parent, spouse or worker. He states further that: "Eruptive changes must be differentiated from normative transitions, or changes that are expected as a result of shared understandings of the course of life" (Cohler, 1987, p. 367). This emphasis on the social timetable and the special problems of "off-time" events are of particular note.

Off-time adverse events may be early in one's expected social timetable, such as forced early retirement, or late in one's expected timetable, such as people who marry and have children for the first time in middle age. Cohler (1987) feels such events are especially difficult, with a "particularly profound impact upon adjustment" (p. 368). Little chance for role rehearsal and lack of social models
and cohorts may help explain why off-time early events have a greater negative impact than other role-connected life changes that are delayed or off-time late (Pearlin, 1983). The targeting of off-time early events, that is; eruptive events that are earlier than is usual and expected in one’s social timetable, to examine how coping impacts adjustment seems promising. As the developmental psychopathologists suggest, events which are viewed as transition points in the life course are also of special interest in studying resilience. Too-early life transitions, therefore, may be particularly informative about the coping processes of invulnerables.

Richard Lazarus. A final area in the stress and coping literature which offers much to the researcher of resilience are the studies of Richard Lazarus and his colleagues. Unlike work in hardiness, Type A coping style and life-events, Lazarus and his colleagues present a model of stress, coping and outcome which is complex, multi-directional and situation specific. This transactional model has important ramifications for empirical data collection and analysis. In addition, Lazarus and Folkman’s (1984) theoretical work on stress and coping has already been referred to often as setting a standard in the field. This book, *Stress, Appraisal and Coping* (1984) is based strongly in cognitive and phenomenological psychologies, and offers a consistent theoretical framework to evaluate coping and
stress. This framework has also encouraged others from other metapsychological orientations to suggest alternatives.

Central to Lazarus and Folkman's (1984) theory of coping and stress are the following three constructs. Coping is viewed as a process, in which different interacting components are seen as crucial over time. The process of coping includes primary and secondary appraisals, the coping behaviors themselves, and outcomes, which in turn impact on further appraisals and coping behaviors.

Secondly, Lazarus and Folkman (1984) distinguish between two general functions of coping: strategies directed at managing or altering the problem causing the distress (problem-focused coping), and strategies that are directed at regulating the emotional response(s) to the problem (emotion-focused coping) (p. 150). Again, the interactive nature of Lazarus and Folkman's (1984) model is seen in their discussion:

Emotional forms of coping are more likely to occur when there has been an appraisal that nothing can be done to modify the problem... Problem-focused forms of coping, on the other hand, are more probable when such conditions are appraised as amenable to change. (p. 150)

Finally, Lazarus and Folkman's (1984) model of stress and coping is situation specific. Dispositional or trait
concepts of coping as a personality variable are seen as
underestimating the complexity and variability of real
coping efforts.

In addition to this theoretical base, Lazarus and his
colleagues have reported many empirical studies that oper­
ationalize and test their theory. As a means to study the
process of coping, the Ways of Coping measure was developed
(Folkman & Lazarus, 1980) and revised (Folkman & Lazarus,
1985). This self-report pen and pencil measure offers a
repertoire of 50 coping behaviors and thoughts that people
sometimes use when stressed. Respondents are given a
particular stressor and asked how often they used each
strategy and how effective they felt it was for them in
handling that particular event. Initially created with a
distinction between problem- and emotion-focused coping
strategies, the Ways of Coping has been found to contain
several factors (Folkman, Lazarus, Dunkel-Schetter, DeLongis
& Gruen, 1986; Scheier, Weintraub & Carver, 1986; Aldwin &
Revenson, 1987) and has been critiqued on this basis
(Carver, Scheier, & Weintraub, 1989). However, the Ways of
Coping remains the most widely used measure of coping in the
literature (Aldwin & Revenson, 1987; Carver, Scheier &
Weintraub, 1989).

The Ways of Coping measure is usually employed in two
types of designs. In the first, a single event (for ex­
ample, a college examination) provides the context in which
cognitive appraisals, coping strategies, and outcomes are measured (Folkman & Lazarus, 1985). Comparisons are made between individuals on these variables. In the other design, person characteristics, appraisals and coping strategies are studied across events, and long-term outcomes measured (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986; Folkman, Lazarus, Gruen & DeLongis, 1986). Here, each individual is compared across situations/times. These interindividual and intraindividual designs both assume that coping is situational (not dispositional) and that an interactive relationship exists between appraisals, strategies and outcomes. These complex designs in which the point or points in time of assessment, the situation or types of situations studied, the functions and efficacy of a large range of coping strategies, and the various outcomes of interest, are all assumed to interact, has made the analyses of data and reporting of findings difficult. As Aldwin & Revenson (1987) state: "the few studies that have examined the relation of coping to some outcome measure have produced inconsistent results" (p. 338).

The preferred methodology of researchers investigating stress and coping under Lazarus' broad model, therefore, includes attention to the process of coping and to the interactive nature of appraisals, strategies and outcomes. Lazarus and Folkman's (1984) model defines each of these components. Appraisals are primary or secondary. Strat-
egies are problem- or emotion-focused and can be assessed using the Ways of Coping. Lazarus and Folkman (1984) point out that their measure has problems of potential inadequate memory and retrospective falsification, but add that these are part of the coping process and are true of any self-report measure. They further feel that the field is too young for multi-level or multi-reporters measures. "In the long run, we will need convergent techniques to validate and amplify findings, but their use now may be premature" (Lazarus & Folkman, 1984, p. 327).

Finally, outcome is defined as adaptation in one of three areas, depending on the study: (1) function in work and social living, (2) morale or life satisfaction, and (3) somatic health (Lazarus & Folkman, 1984, p. 181). Lazarus and Folkman (1984) discuss their concept of appropriate outcome variables in coping and stress research in some detail. Functioning well in work and with others includes role fulfillment and subjective satisfaction with interpersonal relationships. Morale involves both short-term well being and long-term satisfaction based on one's own personal, subjective expectations. Finally, somatic health includes both chronic and acute illnesses and may include mental health outcomes as well. Of special note to those interested in competency under high risk is Lazarus and Folkman's (1984) warning:

It is important to recognize that good functioning in
one sphere may be directly related to poor functioning in another and that good functioning in one area does not necessarily mean that the person is functioning well in all areas. (p. 225)

Within the huge literature on stress and coping, there are, therefore, four areas of study that offer special insights and methodologies for the student of resilience. Three of these, behavioral medicine and especially work on hardiness, coping styles like Type A coronary-prone behavior, life event studies, employ direct models in which stress, coping and outcomes are thought to be directly related. The fourth area includes those studies based on the more complex theoretical models of Lazarus, in which the factors are thought to be related in multiple directions. All four groups of studies are similar in their meta-psychological bases in cognitive psychology and social science research. Their methodological standards include self-report measures, artificially created and real-life events, and single assessment points for interindividual designs and several data collection points for intra-individual designs. Though none of these researchers specifically address issues of invulnerability or resilience, all express interest in those subjects who manage to achieve positive, adaptive outcomes despite stress.
Contributions of Stress and Coping Research

There are three major concepts in the stress and coping literature which can be of particular help to the researcher of invulnerability. The first of these is the field’s emphasis on the subjective, phenomenological world of the subject. The phenomenological perspective of Lazarus and other coping researchers allows for an evaluation of the subjective experience of stress for the subject. This understanding creates a context for the person’s coping efforts. In addition, the use of self-report measures allows for measurement of emotion-focused coping and emotion-based outcomes which otherwise would have to be evaluated using clinical judgment or projective testing. Thus, these studies limit the use of labor intensive measures which are expensive, difficult to employ, and harder to replicate in further research. Finally, Lazarus and Folkman (1984) observe that the weaknesses of self-report methodologies, namely inaccurate and incomplete recall, are themselves part of the coping process.

The second issue within the stress and coping literature which is important for studying resilience is the debate about whether coping is a trait or style or whether it is situational. The dispositional or situational nature of coping has strong implications not only for what designs are employed to evaluate what research questions, but also for how invulnerables are to be conceptualized. If one
follows a situational approach to coping, then each stressful event can be viewed as an example of behavior that represents characteristics of both the person and the situation. To focus on a set event and then examine subjects' appraisals and coping strategies in an interindividual design allows for exploratory analyses of person factors within that context. The suggestion that coping repertoire or complexity may be a crucial person variable to study is especially intriguing as applied to invulnerables. Lazarus and Folkman (1984) suggest a curvilinear relationship between coping complexity, or range of coping strategies employed, and adaptational outcomes.

Finally, the suggestion that off-time early life transitions may be of particular importance in the study of coping, and a useful situation for evaluating coping while under stress, is of particular interest to the researcher of resilience. As for the developmental psychopathologists, to assess coping at critical life transition points has often been suggested by coping and stress researchers. Further, events which involve social role changes are thought to be especially important in understanding individual differences in coping. And of these, off-time early events, where the person must adapt to unexpected roles for which there are few acceptable social models, are perhaps the most stressful of all.
Limitations of Stress and Coping Research

The limitations of the stress and coping literature in relation to resilience research includes the practical limitations of studying coping as a process within Lazarus' model, as well as problems of measurement. Lazarus' call to consider the complexity and transactional nature of the appraisal, coping and outcome process offers a more psychological and subjective context in which to study stress and coping. However, as is seen in the literature, it also makes the testing of general principles of the model difficult. Studies tend to be treated as isolated examples of particular coping within particular, often contrived, situations. To use Lazarus' model to explore an area like invulnerability is especially problematic in that this relatively new area also has few well established and agreed upon basic findings to guide further research. The challenge is to respect the subjective and contextual nature of coping, while still evaluating group differences among subjects. Lazarus' model must be simplified, and elements lost, to be applied to exploratory research in invulnerability.

The second limitation of the coping and stress literature as applied to the study of resilience is one of measurement. Every stress and coping study published must, ultimately, rest upon the reliability and validity of its measurements of stress, of coping and coping strategies, and
of outcome. Each of these complex areas can be assessed using any of a variety of self-report questionnaires or scales available. The attention of many studies is, in fact, solely on measurement development and application. However, for researchers interested in invulnerability, few stress and coping measures have been specifically designed or evaluated to assess key concepts of interest.

In resilience research, life-event checklists can be utilized to help group subjects as high or low stress. The Ways of Coping, or other coping inventories, can be used to assess strategies used and their range, or coping complexity. And measures to assess outcomes in the broad areas of work functioning and interpersonal relationships are also available. But these individual aspects may not allow the exploration of the process by which invulnerables overcome the odds and achieve competence. The psychological meanings of events and the subjective experience of coping for invulnerables suggests the need for a more clinical approach. Life-history interviews are one such assessment. Self-reported life narratives might be used to explore the relationships found by traditional stress and coping measures in a way that illuminates the process of becoming invulnerable.

Choice of Research Problem and Population

The literature of developmental psychopathology and
stress and coping offer several models to explain the relationship among early historical and acute stress, coping, and competence. For the researcher of resilience, this creates both confusion and opportunity. One of developmental psychopathology's risk models holds that stressful early life events are predictive of defensive or coping styles and of later adaptational outcomes. Another model in this area suggests that dispositional, familial and social protective/vulnerability variables mediate the relationship between stressful histories and later outcomes.

Similarly, there are two basic models within the coping and stress literature which have been used to test for relationships among stress, coping and competence. Behavioral medicine suggests a model in which coping style directly leads to health outcomes. Life events research also suggests a direct model, though here it is between stress and outcome. Finally, Lazarus and his colleagues posit a complex, transactional model in which historic and acute stress, coping and competence are interrelated.

Despite the similarity of models in both traditions, there are important methodological differences between developmental psychopathology and stress and coping research. In developmental psychopathology, relationships are explored using longitudinal, prospective designs with clinical assessments. Resilient adults are those subjects who overcome their stressful childhoods to lead productive
work lives and connected interpersonal lives. Stress and coping research, on the other hand, explores the relationships between variables primarily using intraindividual or interindividual designs with standardized, self-report measures. Invulnerables, as described by this research tradition, are those subjects who employ effective coping strategies which free them from the expected negative impact of their high-risk status, allowing them to work and love well.

In combining these two approaches in an effort to use the best contributions of both, the researcher of resilience must address several critical issues: the type of research model and methodology to be used, the population to be studied, and how the concepts of stress, mediating factors or coping, and outcome will be measured.

In choosing a research design, the student of resilience must consider that the literature of invulnerability is relatively young. The need for exploratory research to help identify variables and generate hypotheses remains pressing. Further, in combining two literatures whose philosophical bases are so different, as is proposed, decisions about definition and measurement are, at best, preliminary. Given these considerations, longitudinal, prospective research designs seem premature. Similarly, to study the process of coping multiple times across a single event, or to study high-risk individuals across events,
would also require an investment of resources not yet justifiable in resilience work. This study proposes a retrospective design in which one important stressful event will be closely evaluated in terms of historical and acute stressors, coping, and outcome. This example of coping behavior will then be supplemented by additional life history information about the process of how invulnerables have reached competence. A single assessment design, using both standardized and clinical measures, is proposed.

In drawing from both developmental psychopathology and from stress and coping research, the proposed research includes the possibility of both direct and indirect relationships among the variables of historic (chronic) and acute stress, coping and competence. This combination model thus offers the opportunity to test the competing models within each research tradition.

A second consideration in proposing future research in the area of invulnerability is the choice of research population. Most of the developmental psychopathology literature is based on observations of infants, with studies following them up into adulthood. The emphasis has been on childhood and early life stresses. In contrast, the stress and coping literature has been primarily concerned with adult subjects. There has been little written about adolescents and how stress may affect resilience in this population.
Compas (1987) offers a review on the literature on coping with stress during childhood and adolescence. This is one of very few review articles that includes studies from both the stress and coping and the developmental psychopathology literatures. Compas (1987) summarizes these areas of research among children and adolescents: infant attachment and separation, social support, interpersonal problem solving, coping in achievement contexts, coping styles work (Type A/B, repression/sensitization and monitoring/blunting), and invulnerability research. Compas concludes his review with a call for the development of comprehensive measures of coping appropriate for children and adolescents. He and his colleagues' later work has been invested, in part, in the development of the Adolescent Perceived Events Scale (APES) (Compas, Davis, Forsythe & Wagner, 1987). Compas also suggests future work is needed in the relation between coping and temperament, and between coping and various social contexts (especially the family). Finally, prospective, longitudinal designs are suggested to view how coping changes or remains stable with development (Compas, 1987).

Another researcher who has examined adolescents and their coping is Luthar (1991). Luthar is a developmental psychopathologist and her work assumes many of the tenets of the field. However, her (1991) study of inner-city ninth graders and the factors encouraging social competence
despite stress, used a single assessment design to look at resilience. Luthar's (1991) methodology included: two operational definitions of stress (life-events checklist and life history events), social competence ratings by teachers and peers, as well as school grades, and assessment of personality moderating variables (intelligence, locus of control, social skills, and ego development).

Central findings of Luthar's (1991) study were that ego development was compensatory against stress, that internal locus of control and social skills were protective factors, and that intelligence and positive life events were involved in vulnerability processes. The finding that high intelligence under the condition of high stress was related to poorer adjustment is of particular note. Two other findings of the study are also of special interest: children labeled resilient were more depressed and anxious than competent children from low stress backgrounds, and contrary to the developmental psychopathology literature, life-history or demographic variables used as measures of stress (low SES, minority group membership and large family size) were not related to adjustment (Luthar, 1991).

The empirical work of Compas and Luthar offers recent examples of evaluating adolescent coping from the two literatures of stress and coping and developmental psychopathology. Their work again emphasizes the differences in the philosophical assumptions, predictive models, and
measurement of key concepts used by these two fields. Their focus on adolescents also sets them both apart as pioneers in their respective literatures. Their inclusion of adolescents, and particularly adolescents at risk for personal and social pathology, is of particular importance in the study of resilience.

There is, however, another reason to target adolescents in the study of resilience. As has been suggested, times of transition are of special interest in the resilience literature. Both research traditions reviewed suggest that "key turning points" (Rutter, 1985) in the life-course offer the clearest insights into how invulnerables remain competent under high stress. Adolescence includes several such turning points, among them the first primary dependence on peers, rather than familial supports, the initiation of sexual behaviors, and high school graduation. Another stressful life transition which sometimes occurs among adolescents is pregnancy and childbearing. This last event also meets Cohler's (1987) call to focus on too-early role changes as the situation of interest in research into invulnerability.

Adolescent pregnancy and childbearing has received both scholarly and media attention since the 1970s. In both arenas, the focus has largely been on the negative social consequences for mother and child. Clearly, adolescent mothers form a well-recognized risk group for school drop-
out, economic hardships, marital and family disruption (Elster, Ketterlinus, & Lamb, 1990; Furstenberg, Brooks-Gunn, & Morgan, 1987; Fernandez, Ruch-Ross, & Montague, 1993). Their children share in these negative outcomes. There has been considerably less attention given to the psychological consequences of teenage parenting, although media stereotypes of teen mothers as depressed, helpless, and addicted to substances abound.

Furstenberg, Brooks-Gunn, and Morgan (1987) have challenged such stereotypes and the supposed multi-generational cycle of poverty and early childbearing. They caution that the negative social and personal stereotypes of adolescent mothers can be challenged on three points: all existing studies show great variation in outcomes of early parenting, studies focus on the years immediately following the birth of the first child, which one would assume to be a crisis period, and many of the observed negative consequences presumed to be caused by early childbearing may, in fact, be attributable to prior differences in personal or family background.

By ignoring diversity, investigators have missed an opportunity to understand why some young mothers manage to overcome the disadvantage associated with early childbearing, while others are overwhelmed by it. Additionally, by not following teenage mothers over a significant proportion of their adult lives, ... it is
impossible to understand how early life decisions are translated into later disadvantage or success.
(Furstenberg, Brooks-Gunn & Morgan, 1987, p. 9)

Furstenberg and his colleagues' longitudinal study began in the mid-1960s, and followed over 300 teenage women and their children. The initial study (Furstenberg, 1976) covered the first 5 years post partum, and confirmed educational, occupational and marital detriments of early childbearing. The modal pattern of the transition to motherhood was unpredictable and disorderly, with many interruptions of education, employment, living situation and relationships. However, the author also reports the tremendous diversity in outcomes among his fairly homogenous sample (first pregnancy, Black, low-income, urban females in their mid-teens). A substantial minority of the teen mothers were managing the transition to parenthood quite successfully (Furstenberg, 1976). In 1982, work began to attempt a follow-up evaluation of the earlier sample. This time frame would reach subjects as their children approached the end of high school. Of the respondents, 89% were eventually located, and the overall completion rate was 80% of families and 72% of mothers.

The results of the 17 year follow-up are reported in Adolescent Mothers in Later Life (Furstenberg, Brooks-Gunn, & Morgan, 1987). Two major sets of comparisons were made: those between the woman’s economic and social status in 1972
and her status in 1984, and those between subjects' status in 1984 and a similar group of women who delayed childbearing. Critical findings include: a substantial majority of the mothers completed high school, found regular employment, and (if used) managed to escape from public assistance; relatively few had large families; and half the sample in 1984 were living on modest, but secure incomes, with a quarter making over $25,000 annually (Furstenberg, Brooks-Gunn, & Morgan, 1987). The sample was seen as doing much better when compared to each subject's status 12 years earlier, but compared to Black mothers of similar age who had delayed childbearing, the sample was doing less well on all outcomes evaluated.

Despite the importance of these findings, Furstenberg's work is of greatest interest to students of invulnerability for its emphasis on the diversity of experiences among his cohort and for the study's analyses of the "pathways to success in adulthood" (Furstenberg, Brooks-Gunn, & Morgan, 1987). The researchers chose to focus on two areas, economic status and fertility, to explore this process. Their work provides a model for integrating multiple analyses within a life-history time context. Variables at five time periods are examined: childhood, during pregnancy, post partum, at the five year follow-up, and at the 1984 follow-up. Applying a "quantitative social science methodology," in which some variables precede others in time, Furstenberg,
et al. (1987) make likely predictive explanations. They state that "the data we analyze are consistent with the explanations we offer. But this information does not prove them" (p. 50).

Furstenberg, et al.'s (1987) economic analyses will be reviewed here. Regarding the relationship between economic status in 1984 and childhood background variables, only parental education was a significant predictor. Welfare experience as a child and number of siblings were weakly associated with economic status. Dispositional variables at pregnancy associated with economic status in 1984 were: educational aspirations, and being at grade level. Use of birth control at one year post partum also predicted economic status in 1984. Five year follow-up variables which predicted economic status in 1984 included: additional fertility, educational achievement (but not early work experience), and living with a parent at the first follow-up, which predicted poor economic outcome in 1984 (perhaps because this fostered dependence).

Multivariate analyses suggest many pathways to poor economic status in 1984. The subjects' parents' educational level had a direct effect on economic outcome in 1984. Welfare experience as a child made being on welfare five years post partum significantly more probable and this doubled the probability of low economic status in 1984. Finally, many siblings in childhood increased the prob-
ability of not having finished high school five years post partum which was related to economic status in 1984. Low educational aspirations during pregnancy made it less likely that one continued in school or used birth control and more likely that one would depend on welfare at 5 years post partum. These findings, then in turn, were related to lower economic status in 1984.

Such pathway analyses, assuming life course history to be predictive, but not proof of the relationships discovered, suggests exciting possibilities for studying the processes of invulnerability. Despite the complexity of such analyses, they may offer a way to track the factors contributing to competence and positive outcomes over time. Given Furstenberg and his colleagues’ focus on process and diversity in studying adolescent pregnancy and its consequences, examining the same area in a search for clues to resiliency seems promising. Thus, the present study will select adolescents who are mothers or will be mothers as the study population. This experience is viewed as a too-early stressful life event which has important role change implications and some research precedent for analyzing the process of coping and adapting competently.

A final consideration of proposed research in the area of resiliency are issues of measurement. Invulnerability research demands the assessment of stress, coping and outcome. In studying invulnerables, the measurement of
stress is crucial in that being under a condition of high stress is necessary to be classified as resilient. Thus, to maximize the probability of identifying invulnerables, the study population of adolescent parents will be chosen from agencies serving underprivileged youth. Subjects will also be considered high-risk because of their status as pregnant or parenting adolescents. In addition to this general at-risk classification, stress in the last year will be measured using a standard life events checklist designed for adolescents. This measure of stress will permit the examination of how early life-history factors and coping affect outcome under different conditions of stress.

Coping will be assessed using the Ways of Coping scale (Folkman & Lazarus, 1985) for the particular stressor of "finding out you were pregnant." Several dimensions are of special interest. Coping complexity, that is, the range of coping strategies applied to the stressor, will be assessed. Coping efficacy, as self-reported, will also be assessed. Finally, the use of problem- versus emotion-focused coping strategies will be evaluated for the group and for each subject.

Finally, a careful and comprehensive assessment of outcome is needed for research in resilience. Consistent with the research in developmental psychopathology and stress and coping, a multi-dimensional outcome variable will be assessed. Subjects will be rated from interview on
functional competence. For an adolescent population, this will be high school attendance or completion. For pregnant teenagers, realistic plans to return to school will also be assessed if applicable. Subjects will also complete a measure of social support to assess availability of and satisfaction with interpersonal relationships. Though social support is often viewed as a coping strategy and can be conceptualized either as a stress-outcome mediator or moderator (see Cohen & Wills, 1985; Baron & Kenny, 1986), the creation and maintenance of a network of social support can also be viewed as an outcome in that it represents a display of interpersonal competence. The need to assess competence in both work and interpersonal relationships has been stressed by researchers in the field of resilience. Finally, a measure of self-esteem will be included in the outcome assessment of competence. Again, the literatures reviewed suggest that an adequate sense of personal efficacy is a necessary component of invulnerability.

Summary of the Proposed Study

The study of resilience among adolescents who are pregnant or parenting necessitates a series of preliminary analyses of a complex model including both direct and indirect effects. The very definition of invulnerability means that high levels of chronic and acute stress do not
always directly lead to decreased competence. The proposed study will attempt to incorporate aspects of models in the developmental psychopathology and the stress and coping research traditions. Early life stressors, found to constitute chronic stress by developmentalists, will be used to generate a list of expected compensatory or protective factors. Acute stress will be explored for direct and indirect effects on coping, on competence and as a mediator of other direct relationships. Dimensions of coping raised in the stress and coping literature will be evaluated for their direct and transactional relationships with stress and outcome. And most importantly, these relationships will be examined among a high-risk group among whom competence is generally not expected.

The sample to be studied will be high-risk, first time mothers assumed to be at a major life-transition point. Five chronic stress compensatory/protective variables will be assessed: (1) presence of a consistent caregiver to age 11, (2) family stability as measured by the number of household moves prior to age 11, (3) family size, (4) parental education and (5) involvement of outside-of-family supports. Acute stress level during the last year will be assessed using a life-events checklist. Three coping dimensions will be evaluated: coping complexity, coping-focus, and coping effectiveness. Finally, the outcome variable of interest is competence, which will include equally weighted functional,
social and intrapersonal dimensions. To summarize the research models proposed in the literature and the analyses of this study, two separate models will be investigated. The first of these proposes a direct predictive relationship among stress, coping and competence variables. This model can be summarized as $X \rightarrow Y$ and $Z$, and $Y \rightarrow Z$; where $X_1$ is chronic stress and $X_2$ is acute stress, $Y$ is coping, and $Z$ is competence. Of interest is the relationship of $X$ to $Y$ and to $Z$, and the relationship of $Y$ to $Z$.

The second model proposes indirect and transactional relationships among the stress, coping and competence variables. Mediator and moderator factors are assumed to influence direct relationships. Given $X_1$ is chronic stress, $X_2$ is acute stress, $Y$ is coping and $Z$ is competence, summary of this model is more complex. First, $X_1 \rightarrow Z$ and $X_2 \rightarrow Z$, and $Y$ mediates these relationships. Secondly, $X_1 \rightarrow Y$ with $X_2$ moderating the relationship. Finally, $X_2 \rightarrow Z$ with $Y$ moderating the relationship.

This study, therefore leads to two major sets of hypotheses: Model 1:

A. 1. Chronic stress predicts competence.

B. 1. Chronic stress predicts coping.

C. Coping predicts competence.
Model 2:

A. Coping mediates the relationship between:
   1. Chronic stress and competence.
   2. Acute stress and competence.

B. Acute stress moderates the relationship between chronic stress and coping.

C. Coping moderates the relationship between acute stress and competence.
Subjects in this study were selected from a larger study conducted by the Ounce of Prevention Fund begun in late 1989.

This larger study was designed to investigate the target service population of two adolescent pregnancy programs serving poor and disadvantaged teenagers. Of 52 available research protocols, 41 were selected for the current study. The selection criterion was that all subjects were pregnant with, or parenting, their first and only child at the time of the study.

The two social service programs selected for the larger study were representative of the Ounce of Prevention Fund/Parents Too Soon (OPF/PTS) initiative, which administered over 40 such local programs in Illinois at the time of the study. In evaluating the target population for these programs, three groups of pregnant or parenting adolescents were recruited: active program participants, program drop-outs, and non-participants. Subjects were paid $25 for their participation.

In the large study, subjects ranged from age 15 to 21

82
at the time of interview, with the average age being 17.1 years. Age at first pregnancy was between 13 and 19. More than a third of the subjects were pregnant at the time of interview. Ethnicity of subjects was as follows: 38% Black, 38% White, and 23% Hispanic. Of the subjects, 60% were recruited from the urban site, and 40% from the rural site. In selecting only first-time parents (or first pregnancy), subjects for this study averaged age 17.2 years, with 44% White, 35% Black and 21% Hispanic.

Measures and Key Constructs

A semi-structured life history interview was conducted by one of two trained graduate psychology student interviewers. The interview schedule used appears in the Appendix. Interviews were tape recorded and later transcribed. For Hispanic participants, interviews were conducted in their preferred language, often with some sections being in English and others in Spanish. In addition to this interview, four standardized, pencil and paper measures were administered. The interviewers helped subjects complete these; reading, translating, and/or explaining some items for subjects who had difficulty. These measures are described below. Finally, subjects were also interviewed about program involvement and what services were available to them or needed. The entire research protocol was completed in 60 to 90 minutes.
Chronic stress: Protective factors from life history.
The following factors viewed as potentially protective in
the literature will be rated from the life history interview
data:

Consistent caregiving will be coded as present or
absent with the judgement being related to the subject's
primary residence prior to age 11 as including the same,
consistent parental figure. In two-parent households, the
primary caregiver, as identified by the subject, will be
evaluated.

Family stability will be broadly assessed as the number
of household moves or changes in households reported by the
subject prior to age 11.

Family size will be assessed as the number of siblings
with whom the subject has lived. Siblings will be defined
by the subject, with step relationships and even non-related
people counted if the subject considers them siblings.

Parental education level will be assessed as post-high
school, high-school graduate or equivalent, or non-graduate.
In two parent households, the highest education level
obtained by either parent will be assessed.

Finally, the involvement of supportive outside agencies
or institutions in the home or family of the subject will be
coded as highly present, present, or absent. Church-related
organizations, school-related groups, social service agen-
cies, and adolescent parenting program services will be
Acute stress. The selection of the study sample from a larger population of disadvantaged, at-risk adolescents is the primary distinction of chronic stress in this study. It is assumed that all participants are at risk for economic, social and familial stresses. However, to study the impact of differential levels of acute stress on the relationships of predictor variables and outcome, a life events stress score will be calculated from The Life Events Checklist (Johnson & McCutcheon, 1980; Johnson, 1986). This 47 item list of life events is used specifically with children and adolescents. It includes up to three responses for each item. Subjects say whether or not the event listed happened to them in the last year. If yes, the subject notes if the event as good or bad for them. Finally, for all events experienced, subjects rate how much effect the event had on their life by circling one of four statements forming a Likert-type scale (no effect to great effect). The Life Events Checklist also allows the subject to list up to three additional important events not listed among the 47 items. Brand and Johnson (1982) report adequate test-retest reliability. In following the checklist author's suggestions (Johnson, 1986), negative life change scores will be assessed separately from total life change scores (positive plus negative scores).
Coping. In this study there are three separate indices of coping which are assessed. Each is viewed as an independent dimension of coping.

The three indices of coping will be assessed using the Ways of Coping Scale (Folkman & Lazarus, 1985). This measure is a revised 50 item list of possible coping strategies used to handle a specific named stressor. In this study, the question to be answered was: "What did you do when you found out you were pregnant?". To each statement listed, the subject makes one or two rated responses. How often the strategy was used is rated on a four point Likert-type scale from never used to often used. If used, the strategy is then rated on a four point Likert-type scale from not helpful to very helpful. Factor analyses of both the original and revised versions of the scale have identified between six and nine factors. Factors are generally grouped as problem- or emotion-focused (Aldwin & Revenson, 1987).

The first dimension of coping assessed is coping complexity. Most definitions of "good copers" in the literature include a reference to a wide and flexible range of coping strategies in the repertoire. Though this study cannot assess flexibility because coping was assessed only for a single event, the range of coping strategies employed in managing that single event is available from the Ways of Coping measure. Coping complexity will be assessed as the
frequency of different strategies reportedly used in response to the stressor.

As argued by Folkman and Lazarus (1984), the complexity of one's coping with a particular problem situation, is expected to be related to one's coping success in a curvilinear pattern. "Good copers" are those who use a moderately wide range of coping strategies in dealing with a given situation. They are distinguished from those who rigidly use only a few strategies, and from those who waste energy using every possible strategy regardless of whether it is helpful or not. A subject's score on coping complexity can range in this study from 50 to 0.

Coping effectiveness will also be assessed in this study using ratings given on the Ways of Coping Scale. An average effectiveness rating for those strategies used will be calculated. Average effectiveness ratings will range from 3 to 0. Those subjects who are more selective in using coping strategies which are effective for them will score higher on this measure.

Coping focus will be the final measure of coping assessed in this study. This score is the ratio between coping strategies which are problem-focused and those which are emotion-focused. Strategies are distinguished in the factor analysis of Folkman and Lazarus (1985). The six social support strategies are coded as both emotion- and problem-focused strategies. Thus, there are 18 possible
problem-focused, and 38 possible emotion-focused strategies available. Each subject's coping focus score, therefore, will reflect their use of coping strategies, with higher scores indicating a coping repertoire suggesting more of a problem-solving focus.

**Competence.** The variable of competence will include three components in this study. These are: school status, size of and satisfaction with one's social support network, and self-acceptance or self-esteem. The use of a multidimensional variable to define this study's outcome of competence is in response to criticisms of other studies in which single criterion measures of competence have been used. Though multiple-criteria measures introduce inconsistencies and statistical problems (Fisher, et al, 1987), a meaningful measure of competence must attempt to include functional, interpersonal, and intrapersonal dimensions. In this study, therefore, an adolescent must be enrolled in school or graduated, must have been able to develop and now maintain a sizable social network which is satisfying to her, and must report positive feelings about her own self-worth, in order to be judged highly competent. For this adolescent population, the functional measure of competence will be school status. This is the single objective measure of competence in the study; the other two components being drawn from self-report measures. Attendance at or completion of high school will be rated from interview, and
realistic plans to return to school will be assessed if applicable. This functional dimension of competence will be rated within the following five categories: graduated high school or on-time enrolled; off-time enrolled because of time off for pregnancy and plans to return; off-time enrolled (failures or missed credits) with plans to finish; not enrolled with plans to finish; and not enrolled with no plans to finish. A rating of 5 to 0 is possible.

The development and maintenance of a satisfying and large social network will be assessed using The Social Support Questionnaire, Revised (SSQ-R or SSQ-6, Sarason, Sarason, Shearin, & Pierce, 1987). The SSQ-R is a six item measure designed to evaluate the subject's social support network and her satisfaction with it. Each item asks the subject to name (using initials and relationship to the subject) all the people the subject can count or depend on in response to each item. The subject is then asked to rate how satisfied she feels with the overall support she has in each area. This rating is made on a six point Likert-type scale ranging from very satisfied to very dissatisfied. Internal reliabilities for the SSQ-R across three samples ranged from .90 to .93 for both subscores. Construct validity has also been established (Pierce, Sarason & Sarason, 1992).

An average score for the six scenarios presented will be calculated using satisfaction as a multiplier for the
size of the network. For example, a network of two support people which the subject rates as very satisfying is scored four (2 people x a multiplier of 2), as are a network of four people rated as fairly satisfying (4 people x a multiplier of 1), or a network of eight which is rated as unsatisfying (8 people x a multiplier of 1/2). Thus, an average score of 18 to 0 is possible.

The self-esteem or self-acceptance component of competence will be the score obtained on The Rosenberg Self-Esteem Scale. (Rosenberg, 1979). This scale consists of ten statements about how the subject feels about herself. Subjects use a four point Likert-type scale ranging from strongly agree to strongly disagree in response to each statement. The scale was designed to measure a single dimension of self-esteem; self-acceptance and has an alpha coefficient of .87 (Rosenberg, 1979). Possible scores range from 40 to 10.

Each component of the competence measure will be scored and analyzed independently.

Procedure

Subjects were recruited for the original OPF/PTS study from two social services OPF agencies, and from two non-agency programs serving pregnant and parenting teenagers. The OPF agency participants and drop-outs were recruited from agency rosters. Non-participants were recruited from
WIC (Women, Infants and Children food assistance program) recipients at the urban site, and from teenagers attending an alternative school for pregnant and parenting teens in the community served by the rural site. Initial contacts were made by telephone, or more rarely, in person if the prospective subject was scheduled for an agency visit. At the initial contact, the interviewer read a description of the study, including its purpose and a $25 participation compensation, and invited the prospective subject to participate.

Interviews were conducted in person at the agencies or other private locations where disruptions could be minimized. Informed consent was obtained in writing prior to beginning the protocol. For subjects not registered at an OPF/PTS site who were under 18 and living with a parent or guardian, parental or guardian's consent to participate was also secured. Participation in the study was confidential and there were no program consequences for anyone who decided not to participate in the study.
CHAPTER 3
RESULTS

This study explores two conflicting models offered in the resilience literature which attempt to explain the relationships among chronic and acute stress, coping, and competence. The first of these models, Model 1: The Simple Effects Model, suggests simple direct effects between the variables. Hypotheses here include: (1.A-1) chronic stress predicts competence, (1.A-2) acute stress predicts competence, (1.B-1) chronic stress predicts coping, (1.B-2) acute stress predicts coping, and (1.C) coping predicts competence. The second, Model 2: The Interaction Effects Model, suggests mediating and moderating effects among the variables. Under this model, hypotheses include: (2.A-1) coping serves as a mediator of the chronic stress-competence relationship (a compensatory factor); (2.A-2) coping mediates the acute stress-competence relationship (a compensatory factor), (2.B) acute stress moderates the relationship between chronic stress and coping (a protective/vulnerability factor), and (2.C) coping moderates the relationship between acute stress and competence (a protective/vulnerability factor).
In this study, the variables of interest are composite or latent variables. Chronic stress, coping and competence are all conceptualized as multi-dimensional constructs. Each is considered to be a conceptual variable which must be measured using multiple instruments.

The manifest, or measurable, components of the latent variable chronic stress are: presence of a consistent caregiver, family stability, family size, parental education level, and involvement of out-of-family supports. These variables are measured to follow the study's focus on resilience, with greater scores being associated with greater expected protective quality. In this sense, the chronic stress variables are in fact, chronic support variables, which should lead to greater competence and enhanced coping abilities. One of these manifest variables, family stability, was measured by counting the number of household moves the family made prior to the subject turning 11. Thus, family stability has been re-named "family moves," with greater scores being associated with greater instability.

The manifest dimensions of the latent variable coping are: coping flexibility (size of coping repertoire), coping focus (degree to which coping strategies are problem-focused), and coping effectiveness. Hypotheses about coping assume that greater flexibility, more problem-focus and greater effectiveness would predict better competence and
would better moderate or mediate the stress-competence relationship. Again, the study's focus on resiliency necessitates an examination of the possible positive effects of coping, rather than on how coping explains deficits.

Finally, the latent variable of competence is measured in this study by measuring its functional, social and intrapersonal dimensions. School status is used to measure functional competence; social support is the measure of social competence; and self-esteem is the intrapersonal measure of competence. It should be noted that school status is the only observable measure of competence (as reported by the subjects in interview). The other two measures were obtained using self-report instruments.

**Testing the Model as a Whole**

Given the complexity of the model presented; with simple direct, mediating, and moderating relationship effects predicted among latent variables related temporally, the use of structural equation modeling techniques to evaluate the overall model seems appropriate. However, in this study, the use of LISREL or another statistical process which estimates linear structural equations using maximum likelihood methods is ill advised. The number of manifest variables (12) would necessitate a sample size of approximately 120 to appropriately limit the occurrence of alpha or Type 1 error (the finding of significance by chance alone).
To apply linear structural modeling statistics to this study would violate the assumptions of the procedure and surely result in a positive finding because of the small sample size. Further, given the existence of two different models in both literatures contributing to resilience research, a comparison of which model best explains relationships in this sample seems warranted. Thus, no test of the overall or combination model will be made.

Descriptive Findings

A description of the sample and variables measured are summarized in Table 1. The sample studied averaged 17.2 years old, and was 44% White, 35% Black and 21% Hispanic.

Descriptive findings about the four major variables of interest; chronic stress/support (early life history protective factors), acute stress, coping, and competence, offer important implications for the study of resilience. In assessing chronic stress/support factors, four factors proved usable. One factor, the presence of a consistent caregiver prior to age 11, was dropped because all but three subjects reportedly had a consistent caregiver. Of those factors remaining, family size and family moves were significantly correlated with one another, $r(43)=.41$, $p<.01$, suggesting that larger families moved more often. Parental education level was significantly related to family size, $F(2,40)=6.89$, $p<.01$. Parents having high school or advanced
### TABLE 1
**SUMMARY OF DESCRIPTIVE STATISTICS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Range</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17.2</td>
<td>1.5</td>
<td>15 - 21</td>
<td></td>
</tr>
<tr>
<td>Family Moves</td>
<td>3.9</td>
<td>3.5</td>
<td>0 - 18</td>
<td></td>
</tr>
<tr>
<td>Family Size (Sibs.)</td>
<td>3.4</td>
<td>2.4</td>
<td>0 - 10</td>
<td></td>
</tr>
<tr>
<td>Neg. Life Events</td>
<td>9.0</td>
<td>8.9</td>
<td>0 - 38</td>
<td>0 - 150</td>
</tr>
<tr>
<td>Pos. Life Events</td>
<td>8.2</td>
<td>5.6</td>
<td>0 - 23</td>
<td>0 - 150</td>
</tr>
<tr>
<td>Coping Complexity</td>
<td>31.8</td>
<td>9.3</td>
<td>7 - 49</td>
<td>0 - 50</td>
</tr>
<tr>
<td>Coping Focus</td>
<td>32.5</td>
<td>4.9</td>
<td>20 - 50</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Coping Effectiv.</td>
<td>1.9</td>
<td>5.5</td>
<td>.6 - 2.9</td>
<td>0 - 3</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>30.8</td>
<td>3.9</td>
<td>24 - 39</td>
<td>10 - 40</td>
</tr>
<tr>
<td>Social Support</td>
<td>5.4</td>
<td>2.6</td>
<td>1 - 12.3</td>
<td>0 - 18</td>
</tr>
</tbody>
</table>

**Ethnicity**

- White: 19 (44.2%)
- Black: 15 (34.9%)
- Hispanic: 9 (20.9%)

**Consistent Caregiver**

- Yes: 40 (93%)
- No: 3 (7%)

**Parental Education**

- Less than High School: 18 (41.9%)
- High School or Equiv.: 18 (41.9%)
- Beyond High School: 7 (16.3%)

**Outside Support Involvement**

- None: 20 (46.5%)
- Single or Occasional: 19 (44.2%)
- Multiple Contacts: 4 (9.3%)

**School Status**

- Graduated/GED or on-time enrolled: 17 (39.5%)
- Off-time enrolled (bc of pregnancy): 6 (14.0%)
- Off-time enrolled (not bc pregnant): 6 (14.0%)
- Dropped out -- plans to return or GED: 9 (20.9%)
- Dropped out -- permanent: 5 (11.6%)
degrees had significantly smaller families ($M=2.3$, $M=2.4$) than those not completing high school ($M=4.8$, Scheffe procedure). However, parental education level was not related to family stability. The involvement of outside agencies with the family was not related to the other protective factors.

In assessing coping, three scores were derived from the coping measure: coping effectiveness, coping complexity and coping focus, operationalized as the proportion of strategies endorsed which were problem-focused. Of these, coping effectiveness and focus were significantly correlated, $r(43)=.28$, $p<.05$, suggesting these are somewhat related factors. Subjects who report relatively more problem-focused strategies also evaluate each strategy used as more helpful. Coping complexity was not significantly correlated with the other coping factors.

Data on the three factors evaluated to tap competence also suggest that two are related. Social support and self esteem were significantly correlated, $r(43)=.48$, $p<.001$. This relationship implies that subjects who value themselves also report a larger, more satisfying social support network; or, conversely, that well supported subjects have greater self-esteem. Thus, the intrapersonal and interpersonal components of competence used in this study are not independent factors. However, the functional component of competence, school status, was not significantly related to
the other two competence factors.

Finally, in measuring acute stress, two scores make up the overall life change score for the past year. The negative life events score was not significantly correlated with the positive life events score. These appear to be independent factors in this study. The negative life stress scores of this sample of pregnant and parenting adolescents was compared with a sample of 79 female adolescents drawn from the general population (Johnson, 1986). A \( t \)-test showed a significant difference in negative life events score, \( t(120)=2.27, p<.05 \), with this sample reporting greater negative life stress. There was no significant difference in the positive life events scores reported in the two samples.

**Model 1 Hypotheses: Simple Direct Effects**

The theoretical Model 1 examined in this study required a series of statistical tests of the relationships between the four major constructs. A composite variable for overall competence was created using equally weighted sums for each of the three manifest competence variables. The ability of chronic stress/support factors to predict later competence was tested using multiple regression analyses and are summarized in Table 2.

Only one significant predictive relationship was found: Parental education level significantly predicted overall


### TABLE 2

**CHRONIC STRESS/SUPPORT'S PREDICTION OF COMPETENCE**

**Chronic Stress/Support Predicting Overall Competence**

In the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple r</th>
<th>r Square</th>
<th>F</th>
<th>t</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Education</td>
<td>.30</td>
<td>.09</td>
<td>3.94</td>
<td>1.98</td>
<td>.05</td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Sig t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Outside Agency</td>
<td>.20</td>
<td>1.35</td>
<td>.18</td>
</tr>
<tr>
<td>Family Size</td>
<td>-.12</td>
<td>-.71</td>
<td>.48</td>
</tr>
<tr>
<td>Family Moves</td>
<td>.06</td>
<td>.42</td>
<td>.68</td>
</tr>
</tbody>
</table>

**Chronic Stress/Support Predicting Social Support**

In the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple r</th>
<th>r Square</th>
<th>F</th>
<th>t</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Education</td>
<td>.42</td>
<td>.18</td>
<td>8.79</td>
<td>2.97</td>
<td>.005</td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Sig t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Outside Agency</td>
<td>.16</td>
<td>1.15</td>
<td>.26</td>
</tr>
<tr>
<td>Family Size</td>
<td>.02</td>
<td>.13</td>
<td>.90</td>
</tr>
<tr>
<td>Family Moves</td>
<td>.02</td>
<td>.13</td>
<td>.90</td>
</tr>
</tbody>
</table>
competence, $F(1,41)=3.94$, $p=.05$. Other chronic stress/support factors did not significantly add to the predictive significance of this relationship. Chronic stress/support factors also did not significantly predict school status or self-esteem.

In evaluating specifically how parental education level was related to competence, further multiple regression analyses on each component of competence were performed. These revealed that parental education strongly predicted social support, $F(1,41)=8.79$, $p<.01$, accounting for 18% of the variance in social support.

The next hypothesis predicted by Model 1 examines the relationship between acute stress and competence. These are summarized in Table 3.

**TABLE 3**

ACUTE STRESS AND COMPETENCE

Correlational Analyses

<table>
<thead>
<tr>
<th>Acute Stress</th>
<th>Overall Competence</th>
<th>Social Support</th>
<th>Self Esteem</th>
<th>School Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Life Events</td>
<td>$r=.325$</td>
<td>$r=.404$</td>
<td>$r=.111$</td>
<td>$r=.184$</td>
</tr>
<tr>
<td>Events</td>
<td>$p=.017$</td>
<td>$p=.004$</td>
<td>$p=.240$</td>
<td>$p=.119$</td>
</tr>
<tr>
<td>Negative Life Events</td>
<td>$r=-.340$</td>
<td>$r=-.248$</td>
<td>$r=-.266$</td>
<td>$r=-.217$</td>
</tr>
<tr>
<td>Events</td>
<td>$p=.013$</td>
<td>$p=.054$</td>
<td>$p=.042$</td>
<td>$p=.081$</td>
</tr>
</tbody>
</table>

Note: For all correlations, $df=43$. 
Correlational analyses suggest that negative life stress in the past year is significantly correlated with overall competence, $r(43) = -0.34$, $p = 0.01$. Positive life stress was also significantly negatively correlated with overall competence, $r(43) = 0.32$, $p < 0.05$.

Further analyses of these relationships suggest that, in particular, negative life stress is associated with lower self esteem, $r(43) = -0.27$, $p < 0.05$, and less social support, $r(43) = -0.25$, $p = 0.05$. Positive life stress is correlated with more reported social support, $r(43) = 0.40$, $p < 0.01$. Neither life stress score was correlated with school status.

Model 1 also predicted a relationship between chronic stress/support factors and coping (Hypothesis 1B-1). Multiple regression analyses examining the relationship between these two composite variables are summarized in Table 4.

These findings suggest that family moves is the only predictive chronic stress/support factor related to coping in this study. Family moves predicts coping effectiveness, $F(1,41) = 5.40$, $p < 0.05$, accounting for 12% of the variance, and also coping focus, $F(1,41) = 7.52$, $p < 0.01$, accounting for 16% of the variance. Among families who moved more often, subjects reported more effective coping and a higher proportion of problem-focused coping. The other chronic stress/support factors did not significantly add to the strength of these relationships, nor did any chronic
## TABLE 4

**CHRONIC STRESS/SUPPORT'S PREDICTION OF COPING**

### Chronic Stress/Support Predicting Coping Effectiveness

In the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple</th>
<th>$r$</th>
<th>$r^2$</th>
<th>$F$</th>
<th>$t$</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Moves</td>
<td>.34</td>
<td>.12</td>
<td>5.40</td>
<td>2.32</td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>$t$</th>
<th>Sigt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Size</td>
<td>-.08</td>
<td>-.47</td>
<td>.64</td>
</tr>
<tr>
<td>Parental Education</td>
<td>.10</td>
<td>.66</td>
<td>.51</td>
</tr>
<tr>
<td>Use of Outside Agency</td>
<td>.10</td>
<td>.66</td>
<td>.51</td>
</tr>
</tbody>
</table>

### Chronic Stress/Support Predicting Coping Focus

In the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple</th>
<th>$r$</th>
<th>$r^2$</th>
<th>$F$</th>
<th>$t$</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Moves</td>
<td>.39</td>
<td>.16</td>
<td>7.52</td>
<td>2.74</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>$t$</th>
<th>Sigt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Size</td>
<td>-.06</td>
<td>-.37</td>
<td>.72</td>
</tr>
<tr>
<td>Parental Education</td>
<td>.21</td>
<td>1.51</td>
<td>.14</td>
</tr>
<tr>
<td>Use of Outside Agency</td>
<td>-.09</td>
<td>-.64</td>
<td>.52</td>
</tr>
</tbody>
</table>
stress/support factor predict coping complexity.

Model 1's hypothesis B-2 concerns the relationship between acute stress and coping. Correlational analyses of this relationship are summarized in Table 5.

**TABLE 5**
**ACUTE STRESS AND COPING**

Correlational Analyses

<table>
<thead>
<tr>
<th>Acute Stress</th>
<th>Coping Complexity</th>
<th>Coping Focus</th>
<th>Coping Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Life Events</td>
<td>$r = .025$</td>
<td>$r = .286$</td>
<td>$r = .204$</td>
</tr>
<tr>
<td></td>
<td>$p = .436$</td>
<td>$p = .031^*$</td>
<td>$p = .095$</td>
</tr>
<tr>
<td>Negative Life Events</td>
<td>$r = .119$</td>
<td>$r = -.233$</td>
<td>$r = -.317$</td>
</tr>
<tr>
<td></td>
<td>$p = .223$</td>
<td>$p = .066$</td>
<td>$p = .019^*$</td>
</tr>
</tbody>
</table>

Note: For all correlations, $df=43$.

* $p < .05$

Analyses show that positive life stress scores are correlated with coping focus scores, $r(43) = .29$, $p<.05$. This suggests that subjects reporting more positive life events in the past year also reported a higher proportion of problem-focused strategies in coping with their pregnancies. Analyses also show an inverse association between negative life events and coping effectiveness, $r(43) = -.32$, $p<.05$. 
Subjects reporting high levels of negative life events in the past year also judged themselves as less effective in their coping.

The last major predictive relationship suggested by Model 1 concerns the relationship between the coping and competence variables (Hypothesis 1C). These findings are reported in Table 6.

Multiple regression analyses suggest that coping effectiveness predicts overall competence, $F(1,41)=12.28$, $p<.01$, and accounts for almost a quarter of the variance in overall competence. The other coping variables did not significantly add to the strength of this relationship.

Further analyses suggest that coping effectiveness is an especially strong predictor of self-esteem, $F(1,41)=20.07$, $p=.001$, accounting for 33% of the variance. Effectiveness does not, however, predict school status or social support independently. The other coping variables, complexity and focus, are not predictive of any of the three manifest competence variables. Because coping complexity and focus have been conceptualized as potentially related to competence in a curvilinear pattern (extremes of either predicting less competence), multiple regression analyses including a squared term for these variables were performed. No significant relationships were revealed.
TABLE 6
COPING’S PREDICTION OF COMPETENCE

Coping Factors Predicting Overall Competence

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple</th>
<th>r</th>
<th>r Square</th>
<th>F</th>
<th>t</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping Effectiveness</td>
<td>.48</td>
<td>.23</td>
<td>12.28</td>
<td>3.50</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Sig t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping Focus</td>
<td>.02</td>
<td>.11</td>
<td>.92</td>
</tr>
<tr>
<td>Coping Complexity</td>
<td>-.06</td>
<td>-.46</td>
<td>.65</td>
</tr>
</tbody>
</table>

Coping Factors Predicting Self Esteem

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta/Multiple</th>
<th>r</th>
<th>r Square</th>
<th>F</th>
<th>t</th>
<th>SigF/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping Effectiveness</td>
<td>.57</td>
<td>.33</td>
<td>20.07</td>
<td>4.48</td>
<td>.0001</td>
<td></td>
</tr>
</tbody>
</table>

Not in the Equation:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Sig t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping Focus</td>
<td>-.05</td>
<td>-.39</td>
<td>.70</td>
</tr>
<tr>
<td>Coping Complexity</td>
<td>-.08</td>
<td>-.62</td>
<td>.54</td>
</tr>
</tbody>
</table>
Model 2 Hypotheses: Mediating and Moderating Effects

The second model proposed in this study, the Interaction Effects Model, has suggested that coping mediates the relationship between stress and competence. Hypothesis 2.A-1 suggests that coping mediates the chronic stress-competence relationship. Unfortunately, this possible mediating effect cannot be tested in this study because there is no chronic stress/support factor that significantly predicts both competence and coping.

Model 2 also predicts a mediating effect by coping on the acute stress-competence relationship (Hypothesis 2.A-2). These effects can be tested because acute stress does predict coping effectiveness and overall competence in this study. The test of mediation requires a series of three regressions as suggested by Judd and Kenny (1981) and Baron and Kenny (1986). These are summarized in Table 7.

These regressions find that (1) coping effectiveness (mediator) is related to acute stress (independent variable), $F(1, 41)=4.57, p<.05$; (2) acute stress (independent variable) is related to overall competence (dependent variable), $F(1,41)=5.37, p<.05$; and (3) overall competence (dependent variable) is related to both coping effectiveness (mediator) and acute stress (independent variable) when entered into the equation together, $F(2,40)=7.40, p<.01$. Mediation holds in this case because the effect of the independent variable on the dependent variable is less
### TABLE 7

**SIGNIFICANT MULTIPLE REGRESSION SERIES TO TEST FOR MEDIATING EFFECTS OF COPING ON THE ACUTE STRESS -- COMPETENCE RELATIONSHIP**

#### Negative Life Events Score's Prediction of Overall Competence with Coping Effectiveness Mediating

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>rSq</th>
<th>F(eqn)</th>
<th>SigF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coping Effectiveness</td>
<td>-.32</td>
<td>.10</td>
<td>4.57</td>
<td>.039</td>
</tr>
<tr>
<td></td>
<td>regressed on Negative Life Events (NLE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Negative Life Events</td>
<td>-.34</td>
<td>.12</td>
<td>5.37</td>
<td>.026</td>
</tr>
<tr>
<td></td>
<td>regressed on Overall Competence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>NLE and Coping Eff.</td>
<td>.41/-.21</td>
<td>.27</td>
<td>7.40</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>regressed on Overall Competence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Negative Life Events Score's Prediction of Self-esteem with Coping Effectiveness Mediating

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>rSq</th>
<th>F(eqn)</th>
<th>SigF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coping Effectiveness</td>
<td>-.32</td>
<td>.10</td>
<td>4.57</td>
<td>.039</td>
</tr>
<tr>
<td></td>
<td>regressed on Negative Life Events (NLE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Negative Life Events</td>
<td>-.27</td>
<td>.07</td>
<td>3.13</td>
<td>.084</td>
</tr>
<tr>
<td></td>
<td>regressed on Self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>NLE and Coping Eff.</td>
<td>-.09/.54</td>
<td>.34</td>
<td>10.15</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>regressed on Self-Esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
in the third equation than in the second. Thus, when the mediator, coping effectiveness, is controlled, the effects of negative life stress on overall competence are greatly lessened.

A second test of mediation was also indicated because acute stress (independent variable) predicted both coping effectiveness (mediator) and social support (dependent variable). However, in this series of three regressions, acute stress was not found to significantly predict social support in regression equation 2. Therefore, the mediating effects of coping effectiveness on the acute stress-social support relationship cannot be evaluated under the assumptions of the regression analyses (Baron & Kenny, 1986). These equations are also summarized in Table 7.

Two sets of moderating effects are also proposed in Model 2. The first of these is the impact of acute distress on the relationship between chronic stress/support and coping (Hypothesis 2.B). It was predicted that high levels of acute stress may weaken the predictive impact of chronic stress/support on later coping. Multiple regression analyses using interaction effects were used, and simple regression lines for high and low values of significant moderator variables were plotted, following the statistical guidelines advanced in the literature (Baron & Kenny, 1986; Holmbeck, in press). Findings are summarized in Table 8.
### TABLE 8

SIGNIFICANT MULTIPLE REGRESSION SERIES TO TEST FOR MODERATING EFFECTS OF ACUTE NEGATIVE STRESS ON THE CHRONIC STRESS/SUPPORT -- COPING RELATIONSHIP

#### Family Size's Prediction of Coping with Acute Negative Stress Moderating

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>$r^2$</th>
<th>$F$(eqn)</th>
<th>SigF</th>
<th>Sig. of FChange</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Negative Life -23 Stress (NLS)</td>
<td>-.23</td>
<td>.05</td>
<td>2.35</td>
<td>.133</td>
<td>.133</td>
</tr>
<tr>
<td>2</td>
<td>Family Size</td>
<td>.17</td>
<td>.08</td>
<td>1.78</td>
<td>.181</td>
<td>.280</td>
</tr>
<tr>
<td>3</td>
<td>NLS * Family Size</td>
<td>-1.27</td>
<td>.27</td>
<td>4.93</td>
<td>.005</td>
<td>.003</td>
</tr>
</tbody>
</table>

#### Family Moves's Prediction of Coping Complexity with Acute Negative Stress Moderating

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>$r^2$</th>
<th>$F$(eqn)</th>
<th>SigF</th>
<th>Sig. of FChange</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Negative Life .12 Stress (NLS)</td>
<td>.12</td>
<td>.01</td>
<td>.59</td>
<td>.446</td>
<td>.446</td>
</tr>
<tr>
<td>2</td>
<td>Family Moves</td>
<td>.05</td>
<td>.02</td>
<td>.34</td>
<td>.717</td>
<td>.763</td>
</tr>
<tr>
<td>3.</td>
<td>NLS * Family Moves</td>
<td>.90</td>
<td>.13</td>
<td>1.93</td>
<td>.141</td>
<td>.031</td>
</tr>
</tbody>
</table>
Two moderating effects were found. Acute stress significantly impacted the predictive relationship between family size and coping focus. Secondly, acute stress significantly moderated the relationship between family moves and coping complexity. The interaction of negative life stress and family size was significantly associated with coping focus, $F(3,39)=4.93$, $p<.01$.

Under conditions of low stress, being from a larger family increases the proportion of problem-focused coping strategies reported. However, for subjects under high acute stress, larger family size results in less problem-focused coping. Figure 1 illustrates this moderating effect.

Also under hypothesis 2.B, examining how acute stress impacts on the relationship between chronic stress and coping, another moderating effect was observed. The interaction of negative life stress and family moves was significantly associated with coping complexity, $F(3,39)=5.04$, $p<.05$. Under conditions of low stress, being from a family that moved often decreases the complexity of coping with the pregnancy. However, under conditions of high acute stress, being from a family that moved often increases the complexity of coping reported. Figure 2 illustrates this moderating effect.

The last set of proposed moderating variables in Model 2 are those coping variables which were hypothesized to impact the relationship between acute stress and competence
(Hypothesis 2.C). Multiple regression techniques including interaction terms were again employed. No significant moderating variables were found.

FIGURE 1

MODERATING EFFECT OF ACUTE STRESS ON THE FAMILY SIZE -- COPING FOCUS RELATIONSHIP

Legend: $O = \text{High Negative Life Stress (M+1SD)}$

$X = \text{Low Negative Life Stress (M-1SD)}$

---

Coping Focus (% Problem-focused)  

| 40 | O |
| 35 | X |
| 30 | X |
| 25 | O |

Small Family Size | Large Family Size
FIGURE 2

MODERATING EFFECT OF ACUTE STRESS ON THE FAMILY MOVES -- COPING COMPLEXITY RELATIONSHIP

Legend:  O = High Negative Life Stress (M+1SD)
         X = Low Negative Life Stress (M-1SD)

Coping Complexity

Few Family Moves  Many Family Moves
CHAPTER 4
DISCUSSION

The examination of high-risk adolescents who manage to overcome the negative effects of their situations and achieve competence has been the focus of this study. The relations between chronic and acute stress, coping and competence in a sample of pregnant and parenting female adolescents were examined using the two general models available in the resilience literature. The first model, The Simple Effects Model, posited simple, direct effects, with stress predicting coping and predicting competence, and with coping predicting competence. The second model, The Interaction Effects Model, posited mediating and moderating effects among the variables.

Results of this study cannot be said to uniformly support either model proposed. Rather, the study serves as exploratory research in the area, with findings relevant to both models. Central among these are issues of which variables should be included in resilience research, how these constructs should be defined, and how they should be measured. In addition to these general findings, results which follow the hypotheses generated by each of the two
models will be discussed.

Construct Definition

Findings of the present study suggest several conceptual issues which may add to the definitional debate over constructs used in research on resilience. The first of these are the interrelatedness of three of the four protective factors in this study. Previous research and common sense suggest that small, stable families headed by well-educated parents will stimulate resilience in adolescents (Wyman, Cowen, Work, Raoof, Gribble, Parker & Wannon 1992; Garmezy, 1991; Pellegrini, 1990). The predicted negative association of family size and stability was found. So too was parental education negatively related to family size. However, well-educated parents did not provide a more stable home, as measured by the number of physical moves the family made prior to the adolescent turning eleven.

Family stability as a variable has complicated the supposed triad of protection afforded by small, stable households with well-educated heads. Since, in this study, well-educated parents moved as often as did less educated parents, family moves may not be the disruptive, negative experiences supposed by the literature, but perhaps for some families a more positive experience toward a better living situation. This might help explain why the number of family moves was found to predict coping effectiveness. Children
who learn from example to escape negative situations or to embrace new opportunities by making a physical move, may learn how to be more effective copers. Frequency of moves has traditionally been seen as an index of family stability. However in this, and perhaps other high-risk samples, the variable may be, in fact, a measure of resourcefulness.

Another definitional issue is raised in this study concerning the coping factors evaluated. Two of the three coping factors, focus and complexity, were hypothesized to involve curvilinear relationships with life history and with competence (Lazarus & Folkman, 1984). That is, in this study, a balanced focus including both problem and emotion-focused strategies, was thought to represent ideal coping. And "good" coping complexity was likewise assumed to be neither too rigid nor too overinclusive. These more complex relationships were difficult to test and no curvilinear patterns were observed using these variables. In fact, coping complexity was not found to be significantly related with any other variables in the study. Clearly, the desire to measure and compare flexible, complex coping repertoires among subjects was not met in using this variable as operationalized in the present study.

Despite these problems, a relationship was observed between coping focus and coping effectiveness in this study. That a coping repertoire which was more heavily problem-focused in its strategies was judged by subjects as more
effective is of note. The tendency of subjects who were more problem-focused to feel more effective in handling their pregnancies, suggests that there may be adaptive benefits in actively "doing something" about practical needs, rather than focusing primarily on managing emotional reactions. This finding suggests that programs serving these young women might best foster a sense of feeling able to handle the crisis by focusing on strategies which are problem oriented, at least in the early stages of the intervention.

A third construct in the field of resilience which is challenged in this study is that of competence. Here, competence was conceptualized as a composite variable, including measures tapping intrapersonal, interpersonal and functional competence. Among these, social support and self-esteem were significantly correlated, suggesting that intrapersonal and interpersonal success often occur together. The relationship found explains approximately a quarter of the variance. This finding is consistent with a view of competence in which success in one arena will influence, though not entirely predict, success in another area of life (Werner & Smith, 1992; Murphy & Moriarty, 1976). However, it is also consistent with the observation that both measures in this study are self-reported. There is the possibility that a reporting bias may also explain the correlation observed between social and intrapersonal
In contrast, school status was not significantly related to the other two competence variables. Nor was this functional measure of competence related to the other variables in this study. In many studies of adolescents offered in the resilience literature, school performance has been the primary measure of competence (see a review in Luthar & Zigler, 1991). Almost all studies include school grades, teacher evaluations or some other measure of school behavior as a major component of outcome. However, in this population of pregnant and parenting adolescents, school attendance and success may be not be the measure of functional success it was thought to be.

Most of the adolescents in this study felt their schooling had been interrupted because of their pregnancies. Many were subtly or overtly asked to leave their high schools, at least until after their babies were born. Timing of the birth during the school year also made a great deal of difference for those remaining enrolled during pregnancy. To use school status as an outcome measure of competence among this population cannot account for the variances in that status due to the school's acceptance of pregnant teens, the availability of alternative schools, the health of the teen during her pregnancy, or the timing of the baby's birth during the calendar year.

In this study, school status measured competence in an
area of life which was acknowledged as "on hold" or as interrupted for the more important role of parent. Clearly, there were teens who managed to stay enrolled or were able to make realistic plans to go back even during difficult pregnancies or in unsupportive schools. Their functional competence is remarkable. However, those unable to fulfill both the role of student and of mother or mother-to-be were judged, perhaps harshly, as functionally incompetent in this study. It is suggested for future studies of adolescents who are pregnant or parenting that their functional competence not be measured solely by school status. Perhaps attendance at prenatal medical visits or one's ability to arrange appropriate childcare for one's baby would be a more helpful measure of functional competence in the lives of these young women.

Finally, one finding of this study which supports how constructs are defined in the field of resilience concerns acute stress. In this study, the pregnant and parenting teens as a group reported significantly more negative life stress in the past year than did a national sample of female adolescents from the general population (Johnson, 1986). Since the study sample was purposefully chosen from a high-risk population, the finding of a significant difference in negative life stress supports the use of life events checklist instruments to measure risk.
Model 1 Hypotheses -- Simple Direct Effects

Of the many predictive hypotheses advanced by Model 1, four sets of findings are of particular note. The first of these concerns the hypothesized relationship between chronic stress/support factors and competence. Of the four factors evaluated, only parental education significantly predicted later overall competence. This finding confirms those found in many studies (Pellegrini, 1990), and further strengthens the concept of parental education level as a fairly robust predictor of later success.

However, in this study, of the three components of competence, parental education was most predictive of social support, and not significantly related to school status. This study suggests that for pregnant and parenting adolescents the impact of the educational success of one's parent on a child's later success is not primarily in the area of school attendance or completion. The impact found here in the intrapersonal area of competence may, rather, suggest that well-educated parents foster the skills needed to build supportive networks, or may themselves help create more supportive social networks for their children.

Again, it should be noted that the functional success variable used in this study, school status, may also be a poor indicator of functioning in this population. That subjects dropped out of high school in the crisis period around their pregnancies may not predict their later
academic or employment successes (Furstenberg, et al., 1987). Still it is interesting to note that, in this study, parents' educational achievements did not predict school status. Thus, the children of parents who were high school dropouts were no less likely to be enrolled in school than were those of more educated parents.

The second part of Model 1's hypotheses about the relationship between stress and competence concerns the impact of acute stress. Acute stress, both the level of negative stressors and the level of positive life stressors in the past year, predicts overall competence in this study. Higher levels of negative life events were associated with less reported competence, while subjects reporting more positive life events were more competent overall. These findings are consistent with many studies also observing this relationship (Compas, 1987; Garmezy, 1991, Matthews & Glass, 1984).

In this study, those subjects reporting greater numbers of negative stressors in the past year had significantly lower self-esteem and reported significantly less social support. The detrimental impact of a stressful and negative year on the intrapersonal and interpersonal dimensions of competence are clearly suggested in this study. Negative stressors erode not only self-esteem, but also the potential support of a satisfying social network. Subjects reporting more positive life events in the past year reported more
social support, again suggesting that positive and negative life stressors impact greatly on one's ability to maintain and develop a supportive social network. However, these relationships might also suggest that self-esteem and social support limit negative life events; that social support encourages positive life events to occur; or that these factors change the way the event is viewed. The direction of these relationships cannot be stated in this study. School status was not associated with either positive or negative life events as reported by subjects in this study.

Model 1's second major set of predictive findings of particular note in this study concerns the stress-coping relationship. Chronic stress/support analyses suggests that the impact of family stability on coping is significant. It was hypothesized that families who were more stable, moving less often prior to the child's age 11, would foster more effective and more balanced coping in their offspring. The opposite relationship was found in this study. Families who moved often more often produced adolescents who engaged in problem-focused coping and who felt their coping was more effective.

This finding suggests several possible explanations. Families moving more often may have exposed their children to a more problem-focused style of dealing with stressors and opportunities. Or perhaps the need to adjust often to new environments may foster a style in which emotional needs
are undervalued or ignored in order to minimize repeated losses. This last possibility echoes clinical and anecdotal observations in the literature of resilient children as more often displaying emotional "blunting" (Luthar, 1991). The clinical lore of the productive and problem-focused invulnerable who sacrifices her emotional life to maintain resilience resembles this study's finding that familial instability fosters more effective coping.

The third major predictive relationship under Model 1 found in this study concerns the impact of coping effectiveness on competence. Overall competence was significantly predicted by effective coping. Effectiveness predicted almost 25% of the variance in overall competence. Effective copers, who employed strategies they found helpful in dealing with their pregnancies, reported a greater degree of overall competence than did subjects whose coping attempts were less helpful to them.

The intrapersonal component of competence, self-esteem, was especially associated with coping effectiveness. This last finding suggests that subjects who judged their coping strategies as more effective, also rated themselves as having higher self-esteem. This finding has several possible explanations. It may suggest that feeling one has coped well with a crisis leads to greater self-esteem. On the other hand, greater self-confidence overall may influence one's past judgement of how well one coped with a
crisis. There is also the potential of an unmeasured bias, for example, a desire to "look good", an elevated mood, or differences in optimism/pessimism, to be responsible for the relationship found between coping effectiveness and self-esteem.

In summary, the predictive hypotheses of Model 1 variables in this study were generally not supported. Nonetheless, several important findings were observed. Of the manifest variables measured as chronic stress/support factors, parental education was predictive of competence, with its greatest impact on social support. Moving frequently was related to coping effectiveness and to a more problem-focused coping repertoire.

Of those manifest variables tapping coping, effectiveness predicted overall competence, and particularly self-esteem. And finally, acute stress, both positive and negative, was predictive of overall competence, particularly social support. These findings suggest the presence of several compensatory experiences that lead subjects to increased competence. High levels of parental education, frequent moves, effective coping, and positive life events compensate for the negative effects of high-risk and may contribute to resilience.

Model 2 Hypotheses -- Mediating and Moderating Effects

The second model suggested in this study includes both
mediating and moderating relationships among the latent variables. These complex relationships are defined when the relationship between the predictor variable and the dependent variable is systematically influenced in part by a third factor (Baron & Kenny, 1986; Holmbeck, in press). For mediating variables, the mediator becomes part of the chain of causality and illuminates the process by which the predictor and the dependent variable are associated. This enables one to identify how the observed relationship between predictor and dependent variable occurs; that is: through the mediating variable.

Mediator variables. In this study, Model 2 hypothesized that chronic stress/support factors (predictor) would be related to competence (dependent variable) and, further, that coping (mediator) would be a mechanism through which they were related. Chronic stress/support factors were hypothesized to predict coping which itself would predict competence. Coping, then, becomes a mediator of the chronic stress -- competence relationship, explaining when and how it occurs. In this study, however, none of the manifest variables measuring chronic stress/support was associated both which competence and with coping. Thus, it was impossible to detect any mediating effects of coping on the chronic stress -- competence relationship.

However, Model 2 also suggested that the relationship between acute stress and competence might be mediated by
coping. Again, in order to test for this mediation effect, a significant relationship must exist between the predictor (acute stress) and both the mediator (coping) and the independent variable (competence), and between the mediator (coping) and the independent variable (competence). This scenario was met for two sets of variables in the acute stress -- coping -- competence relationship. In the first of these, the negative life events score was significantly correlated with both coping effectiveness and overall competence. Further, coping effectiveness and overall competence were significantly related.

In testing for mediation, the absolute values of the \( F \) statistic in each of three regression equations are compared. In this study, since the prediction of competence by acute stress is less when coping effectiveness is held constant than when it is not, one can suppose that coping effectiveness explains in part the process by which acute stress influences competence.

This analysis allows one to speculate about the causal pathway to resilience in that it suggests that even high-stress subjects may achieve competence by using effective coping strategies. However, though these three variables are related temporally in the design of this study (acute stress in the past year, coping at the time of the pregnancy, and present competence), the causal relationship between them may have alternative explanations. For
example, competent adolescents may recall more effective coping with a past event or may report fewer past negative events as a consequence of a "rosy glow" with which they view themselves and their histories. Objective measures of past events would help clarify this possible explanation in future studies.

This alternative explanation of why coping was found to be a mediator of the stress -- competence relationship may also find support in that the significant relationships reported between acute stress, coping effectiveness, and competence were earlier found to be especially strong in the area of self-esteem. If an inflated positive self-evaluation is indicative of a response set, it is possible that this response set also inflated the other variables measured here. However, testing for coping mediation effects on the acute stress -- self-esteem relationship was not definitive. No summary can be made because the second regression equation did not find a significant stress -- self-esteem relationship to continue the analyses.

**Moderating variables.** Two sets of moderating influences were also predicted by Model 2. Again, the influence of a third variable on the observed relationship between a predictor and dependent variable defines the analysis. Moderators influence the direction or strength of the relationship observed and define when or under what circumstances the relationship occurs. In this study, the first
set of moderator analyses examined how acute stress influenced the relationship between chronic stress and coping. Varying levels of acute stress (moderator) could influence whether the supposed vulnerability/protective influences of chronic stress/support (predictor) lead to worse/better coping (dependent variable).

This was found to be the case for two chronic stress/support factors. Acute negative stress significantly impacted the predictive relationship between family size and coping focus, and acute negative stress impacted the predictive relationship between family moves and coping complexity.

For subjects experiencing low acute stress, increasing family size increases the proportion of problem-focused coping strategies reported. For subjects under high stress, larger family size results in less problem-focused coping. In contrast, for subjects under low acute stress, more family moves results in less complex coping while for subjects under high acute stress, family moves predict greater coping complexity. Thus for subjects under highest risk, small families boost problem-focused coping and more family moves boosts coping complexity.

In the analyses under Model 1, it was reported that there were no significant direct relationships between family size or family moves and any of the coping variables. However, looking at the interactions of the predictors and
possible moderators under Model 2 has better illuminated these complex relationships. The hypothesized protective effects of a small family in fostering healthy coping in adolescents seem to be related to the balance in coping focus between strategies which are problem-focused and those designed to manage emotions. When highly stressed, subjects from small families respond with coping strategies which are problem-solving. When these small family subjects are under low stress, their coping repertoire becomes more focused on managing emotions. This pattern is opposite for subjects from large families. For them, conditions of high acute stress call up emotionally-focused strategies, while low stress allows more problem solving.

As it was initially conceptualized in this study, optimal coping focus was seen as a balance between problem- and emotion-focused strategies. "Good copers" were felt to be those who attended to both the problem solving and the soothing purposes of coping. In this study, small family size predicts a polarization of this balance depending on risk status. Being from a smaller family results in a high problem solving focus under conditions of high stress, and a high soothing focus under conditions of low stress. As family size increases, the extremity of both of these positions lessens until, in very large families, high stress subjects are high soothers and low stress subjects become high problem solvers. Thus, contrary to initial
predictions, small family size appears to be a vulnerability factor in this study. Small family size leads to extremes in coping focus, with the direction of the polarization depending on stress status. As family size increases, there is movement toward a more balanced coping focus among both high- and low-stress subjects. If family size is to be explored as protective/vulnerability factor in future studies, the mechanism of how it protects or harms can only be understood in terms of its interaction with acute stress.

Similarly, the complex relationship between family moves, coping complexity and stress is best explained under Model 2. Though no direct effects were observed under Model 1, the relationship between these variables was found to include a moderation effect under Model 2. Among subjects whose families had few moves, the impact of acute stress on coping complexity was minimal. However, for subjects with many family moves, the impact of acute stress on complexity was great. Highly stressed adolescents showed greater coping complexity as the number of family moves increased. Low-stress subjects showed less coping complexity as the number of family moves rose.

If optimal coping complexity is to be defined as neither too rigid (low) nor too overinclusive (high), then more family moves can be viewed as a vulnerability factor for subjects in this study. However, the direction of the impact of this vulnerability differs depending on stress.
level. When there have been many moves, high-stress subjects become overinclusive in their coping, trying anything and everything. Low-stress subjects become overly rigid, using only a few strategies. Thus, the negative impact of family instability on coping complexity is as was initially predicted. However, the negative impact of many moves in childhood can only be observed when conditions of acute stress are taken into account.

The two moderating effects of acute stress on the relationship between chronic stress factors and coping found in this study exemplifies the potential for research in this area. Despite the absence of a statistically significant direct association between family size and coping focus, or between family moves and coping complexity, the identification of acute stress as a moderator offers important suggestions as to when family size or family moves might offer protection or increase vulnerability for coping. The potential for moderating relationships to generate further hypotheses about protective and vulnerability processes seems a promising line of research and more appropriate for some variables than simple direct analyses exploring associations.

Unfortunately, in this study, analyses of the second set of moderators predicted in the model showed no such effects. As seen in many studies (see Compas, 1987), it was predicted that coping would moderate the relationship
between acute stress and competence. It was thought, for example, that more effective coping would lessen the negative impact of acute stress on competence. However, none of the manifest coping variables were found to be moderators of this relationship.

Conclusions

Analyses following from the two models in this study support the existence of both direct and indirect effects among the manifest stress, coping and competence variables. Among the indirect effects observed are both compensatory/risk and protective/vulnerability factors which impact on the relationships between stress, coping and competence (Rutter, 1987; Luthar & Zigler, 1991). Compensatory factors are those which enhance coping or increase competence regardless of stress level. Protective factors, on the other hand, are those which enhance coping or increase competence only under certain conditions of stress. By examining both models, with their suggested analyses, simple direct effects and compensatory and protective factors have been observed in this study.

Among the variables used to examine the relationship between chronic and acute stress and competence, three simple, direct effects and one mediating effect were identified. Parental education predicted competence. Because of the temporal relation between the variables, with parental
education occurring long before the point at which competence was measured, parental education can be viewed as lessening the impact of risk for this high-risk sample. Social support is especially associated with parental education level. Thus, this study suggests that the mechanism or process by which parental education mitigates risk may be through its impact on intrapersonal competence rather than on academic achievement.

A second simple, direct factor found in the analyses of how stress is related to competence is that subjects' positive life events scores were associated with overall competence. Finally, a simple, direct factor was observed in this study in that negative life events scores were associated with poorer overall competence, particularly lower self-esteem and less social support.

Analyses of mediating factors of the stress -- competence relationship reveals another important finding. Coping effectiveness mediates the relationship between negative life events and overall competence. Thus, Model 2 analyses have added to our understanding of acute stress as a risk factor by revealing that coping effectiveness is one pathway by which stress makes its impact on competence. Acute negative stress weakens coping effectiveness which, in turn, limits overall competence.

In evaluating the stress -- coping relationship, three simple, direct effects and two moderating effect were
observed. The first two of these direct effects concern the relationship of acute stress and coping. Positive life events are associated with greater problem-focus. This suggests either that luck and positive stress lead to a problem solving orientation; that a problem solving orientation leads to more positive life events, or that a third, unidentified factor accounts for both. The second direct effect between stress and coping is that negative life events are associated with less coping effectiveness. Again, three interpretations are possible: that negative stressors lead to less effective coping, that ineffective coping increases negative events in one’s life, or that a third factor influences both.

The last simple, direct effect observed in the stress – coping relationship concerns chronic stress. Of interest is the impact of family moves on coping effectiveness and on coping focus. These surprising findings suggest that there is something in the experience of moving often which helps subjects cope more effectively and with more of a problem-focus. Analyses under Model 2 illuminate this relationship further by uncovering a moderating effect which suggests that the impact of family moves on coping complexity depends on the level of acute stress the subject is undergoing. Thus, family moves can also be viewed as a protective/vulnerability factor in which its impact on the size of one’s coping repertoire depends on the level of acute stress
experienced.

Finally, the stress -- coping relationship analyses of this study suggest another moderating relationship and consequential protective/vulnerability factor. Family size was found to impact on coping focus depending on the level of acute stress. Small families were found to be a risk factor for coping which was unbalanced (heavily problem solving or heavily soothing), depending on the level of acute stress.

Finally, to summarize findings across the models which illuminate the coping -- competence relationship, only one simple, direct factor emerged. Coping effectiveness was related to greater overall competence. In particular, effective coping was associated with greater self-esteem.

Though the findings of this study are inconclusive and do not support either of the general models proposed in the resilience literature, two groups of results merit further discussion. First among these are findings which support the conceptualization of coping as a multi-dimensional, situation-specific, rather than trait, variable. These include the correlation of acute stress with coping focus and effectiveness, and the moderation of the chronic stress -- coping relationship by acute stress. These findings emphasize the importance of variables which are transitory and situation-specific in understanding the nature of coping. Testing for moderating variables focuses the
research on when and under what conditions relationships occur. This is consistent with both Lazarus and Rutter (Lazarus & Folkman, 1984; Rutter 1987). Trait models of coping would not even pursue such complex relationships.

Also of interest concerning coping are the multiple dimensions of coping which this study attempted to measure and evaluate. Findings suggest that coping repertoire is a difficult concept to operationalize. The moderation effects found echo the discussion by Lazarus (Lazarus & Folkman, 1984) that optimal coping is neither too rigid nor too overinclusive and that it is balanced in focus. However, the lack of direct effects involving these two coping dimensions, even when curvilinearity was tested for, suggest that the study failed to tap into these components of coping. Coping effectiveness was a more robust dimension in terms of relating to other variables, but findings here are suspect as they may be related to one or more self-report biases.

The second group of findings needing further discussion are those which may help illuminate the process by which invulnerability develops. The influence of chronic stress/supports in the development of coping finds some support in this study, especially when one includes the impact of acute stress on this relationship. Within this sample of high-risk adolescents, there also appears the finding that higher coping effectiveness is reported by those who are most
competent. And clearly acute stress is related to competence. The development of healthy coping growing out of early chronic supports, supported in the present by limited acute stress, and leading to enhanced competence remains a possible pathway to resilience.
The final area in which this study can contribute to the resilience literature is in offering valuable case study data. The life history interviews conducted with subjects in this study can serve to illuminate much of what has been explored statistically in the study. In evaluating the competence of our 43 subjects, four subjects emerged as unusual in their intrapersonal, interpersonal and school competence. Of these, two scored more than one standard deviation above the mean on self-esteem and on social support and were enrolled on time in high school. These subjects can be considered "invulnerables;" who are doing well despite difficult backgrounds and pregnancies in adolescence. The other two subjects also scored higher than one standard deviation above the mean in self-esteem and social support, and were enrolled in high school; though they were had missed some time there. These subjects might be called "resilient;" with some time needed for recovery following the disruption of adolescent pregnancies, but who are now back in school and planning to graduate.

The first of the invulnerables, Tasha, is a 17 year old Black woman whose child was 15 months old at the time of the
interview. Tasha is the youngest of three children, but the only child of her father and mother. Tasha's parents were in their early twenties when she was born and Tasha's mother was separated from her first husband. Tasha's parents provided a stable home for the three children, although Tasha's father did not move in permanently with the family until Tasha was eight, when the family moved to a city housing project.

Tasha reports the strong and consistent presence of her maternal grandmother in her family's life. While maintaining her own home, this grandmother took care of the children while the parents were in college and worked and served as an additional parent for the family. When asked with whom she felt closest in the family as a child and now, Tasha reported her grandmother. Tasha presents her mother as the family disciplinarian, and her father as an "easy touch" for favors. But Tasha's grandmother clearly has been and is the target of her dearest affections.

Tasha's peer relationships have also been stable, with a consistent "best" female friend since childhood. Her current boyfriend is the father of her child and has been her only sexual partner. Tasha's boyfriend now lives out-of-town where he moved to enroll in a vocational high-school program. Tasha expects the relationship with him to continue. Her boyfriend is two years older than Tasha.

Tasha demonstrates both the difficulties of her at-risk
status and her own ability to rebound from adversity in the story she tells of her post-natal experience and high school. Tasha attended her regular school until the day of her baby’s birth in April. She was then hospitalized for seven weeks because of hemorrhaging. During her convalescence, Tasha’s family arranged for her school work to be delivered to her and she worked at home. Tasha returned for the final week of classes and exams and passed all her classes for Spring Semester.

This story also demonstrates Tasha and her family’s strong support for schooling and their high expectations for career success. In presenting her life story, Tasha mentions how her grandmother would drive her and her sisters to their grade school, even when they moved out of that district. She explains the sacrifice as necessary because that was the school her mother and uncles had attended and her grandmother felt it was a better school. When a city-wide teacher’s strike meant bussing Tasha to another school for third grade, the family simply held her out and she repeated the grade the following year. Tasha proudly reports her academic successes in grade school and junior high. She offers several explanations for dropping out of the honors program in high school after freshman year, clearly embarrassed that she felt the work was too hard. Tasha’s father has a decades-long career with a city department and her mother, who was in college when Tasha was born, has had a
growing career in a social services agency.

In looking at Tasha's scores in this study, her coping profile is somewhat unusual. Tasha reports using many more emotion-focused coping strategies than is typical of this sample. Her repertoire (coping complexity) is just above average and her judgment of how effective her coping was to her was well above average. Thus it appears that in dealing with her pregnancy, Tasha used a variety of coping strategies, many of which were emotion-focused and that they were generally quite effective for her. If this is exemplary of how Tasha tends to handle difficult and complex problems, it may offer some insight as to the type of coping which contributes to her invulnerability.

Tasha's life story includes many factors which identify her as at-risk. Her mother began having children as a teenager. Her parents were unmarried at the time of her birth. Her family lives in a public housing project where there are many social problems. There are drug abuse problems in her extended family. Tasha became sexually active at 15 and did not use birth control. She was pregnant at 16. Despite these odds, however, Tasha is a confident young woman with a strong support system of family and friends. She has attended a social services program for young mothers since before her baby's birth and has used these resources and the availability of her grandmother to arrange quality child care for her daughter. Tasha has
remained in high school and intends to graduate. Her goals are to be a lawyer and later a judge. When asked to list three good things about herself, Tasha replied that she is intelligent, that she will "grow up to be someone," and that "you can depend on me."

In contrast to Tasha's path to invulnerability, Cathy's emergence in this study as the other identified invulnerable is more surprising. Cathy is a 17 year old White woman who was seven months pregnant at the time of the interview. Cathy recalls her early life as an odd mixture of stability and loss. She was adopted as an infant by a well-established couple in their mid-thirties. Cathy reports that her birth mother was 15 when she was born. Cathy's adoptive family included an older brother, also adopted. Her parents both were high school graduates with working-class jobs. Cathy's family lived on a farm outside a small town and used her aunt and uncle across the road as sitters when needed.

Cathy reports having been extremely close to her father as a child. She has many fond memories of extended trips he and she would make to his extended family in Mississippi. Cathy's father died when she was nine years old of heart failure. Cathy's relationship with her mother was described as less close. Cathy feels her mother spoiled her terribly and could never discipline either of the children. The family moved into town after her father's death and Cathy reports her mother had positive relationships with men she
dated, but never remarried or lived with another man.

Cathy reports close and consistent friendships, her "best friends" being twins she has known since they were all three years old. As she entered junior high, Cathy reports her large group of peers began to "party," including alcohol and drug use and sexual activity. Cathy failed eighth grade, mostly because of behavior problems in school and absences. Cathy reports she used alcohol and drugs during this time. She again mentioned in her interview that her mother was unable to keep to the punishments she threatened Cathy with during this period and that Cathy ran away from home several times. Cathy’s first sexual experience was when she was 12 years old and she remained with this partner for two years despite being beaten by him seven times. The boy was four years older than Cathy.

Cathy’s high school experiences have been equally tumultuous. Though she has passed each grade and has managed to receive Bs in classes she enjoys, Cathy’s focus in high school is primarily as a social gathering place. Cathy reports a large group of friends and also identifies herself as a member of a gang, to which the entire group belongs.

After a very brief sexual relationship with a much older man, Cathy has been seeing the father of her child who is two years older than she. At the time of the interview, this young man was in jail, after several serious criminal
violations. Cathy reports she was very upset about being pregnant initially because "I had a lot of goals in life and everything." Her boyfriend and her other friends were very happy for her, however, and Cathy reports pregnancy is an "epidemic" at school this year. Cathy's mother urged her to consider giving the baby up for adoption, but Cathy explained in the interview how she wouldn't consider this option because of her own strong feelings about having been adopted.

When asked for three good things about herself, Cathy replied that she was a happy-go-lucky person; that she doesn't "let anything really bother me," and that she has a lot of friends.

In looking at Cathy's coping profile, she reports having used many fewer strategies to try to deal with her pregnancy than is typical of this sample. Of those she did use, problem-focused strategies were chosen more often than was average. Cathy's effectiveness score for how helpful the strategies were for her was average. This measured profile seems to match that reported by Cathy that she tries not to let things bother her emotionally and that she distracts herself often by activities with friends.

The contrast between Tasha and Cathy in their path to invulnerability is marked. Tasha's focus on performance and school success is far different than Cathy's focus on social success and peer acceptance. Despite this difference in how
each has invested herself, however, both have achieved a strong sense of self-esteem, have created and now maintain a wide and supportive social network and have managed to stay in high school. That Tasha is judged objectively as more successful in her accomplishments is clear. But that both judge themselves subjectively as doing well is also clear.

These two adolescent mothers have obviously chosen two distinct paths to competence. Whether their early histories, especially Cathy's experiences of loss as contrasted to Tasha's loving grandmother's continual presence, have contributed to their different paths to invulnerability is certainly a critical question. But the similarity of these two young mothers seems to be in their ability to choose an area of life -- school for Tasha, friends for Cathy -- and to invest heavily in it and find rewards from it. Tasha's support system is not as strong or satisfying as is Cathy's. Also unlike hers, it includes more family members and fewer peers. Cathy's school life and career goals are not as secure as are Tasha's. She expends only enough effort to get by so that she can stay there with her friends. But for each of these two invulnerables, it seems that their focus and success in one area of life has created a strong sense of self-esteem which has helped them manage other areas of life as well.

This sense of identity and strong investment in one area of life characterizes both the invulnerables in this
study. In both interview transcripts there is a strong sense of continuity among experiences up to the point of the pregnancy. For both girls, the pregnancy was unplanned, though neither was using birth control. Tasha was mortified at her grandmother's angry and disappointed reaction to the pregnancy. Cathy laments that she was disappointed because "I had a lot of goals in life and everything." However, each appears to have quickly integrated the experience using their respective strengths to do so. Tasha takes pride in having "gone to classes until the day I gave birth." Cathy talks about how happy her friends were for her, adding that becoming pregnant is "an epidemic at school this year." Even as Tasha creates a myth that being pregnant won't impact on her identity as a student, so too does Cathy interpret her pregnancy as enhancing her social identity. This ability to incorporate the unexpected into their life-story without losing a sense of continuity is marked in these interviews as compared to most in the sample.

The continuity of Tasha and Cathy's life-stories is in sharp contrast to those told by other subjects in this study. Many of the interviews are scattered -- historically and in subject matter. All interviewers were working off the same historically organized structured interview outline (see appendix). However, many of the young women interviewed could not stay on subject or present their life-stories chronologically.
Though the interviews varied greatly in the amount of self-disclosure, in what was volunteered spontaneously, in eloquence, and in length, the organizational structure of Tasha and Cathy's stories stand out. They have created a myth for and of themselves, and interpret the events of their lives to match that myth. For example, many subjects talked about having to repeat a grade in gradeschool. But Tasha's story of this experience credits her family, and especially her grandmother, as stubbornly refusing to lessen their educational standards by agreeing to the bussing arrangement that year. Tasha "chooses" to repeat third grade rather than lower her standards! Similarly, Cathy's telling of her adoption as an infant and the loss of her father who died when she was nine is strikingly different from other stories of loss told by other subjects. Cathy focuses on her adoptive mother's joy: "nothing would have ever made (mother) more happy than her getting her little girl," and emphasizes how her mother spoiled her after her father's death. Thus, in Cathy's view, she is "lucky" to be so valued by her mother, and is wild because of the mother who cannot bear to discipline her beloved daughter.

Throughout their life-stories, Tasha and Cathy maintain their stable sense of identities by interpreting their experiences as supporting their respective claims to academic or social success. This ability to create continuity in reflecting on one's personal history may well be a part
of their understanding of themselves as competent. Enhanced self-esteem may require, or may in turn foster, a life-story which makes sense to the teller. In such a view, crises and failures may be viewed differently than among those for whom life seems more discontinuous and haphazard. Perhaps invulnerability is, in part, the ability to quickly integrate and move past disturbing experiences in order to maintain the myths of one's identity. That Tasha and Cathy have managed to do so at such a young age is testament to their resilience.
CHAPTER 6

IMPLICATIONS FOR FUTURE RESEARCH AND PROGRAM DEVELOPMENT

This exploratory study evaluated the relationships among chronic and acute stress levels, coping strategies, and competence, in a sample of high-risk pregnant and parenting adolescent women. The focus of the study was on how resilient subjects coped with the life transition of becoming a parent and on the factors which encourage competence despite risk. The study has implications both for continuing research in the area of resilience and for program development for the study population.

This study has three major suggestions for those considering future research in the area of resilience. The first of these concerns the model used to design and test hypotheses. Though resilience research is in its infancy, the use of direct, simple effects models to tap the stress -- coping -- competence relationship here has been found wanting. The problem with this simple model positing a stress -- competence, stress -- coping or coping -- competence relationship is twofold. First, the model does not encourage analyses which can answer how or when the factors are related. To simply identify individual factors which are related to resilience offers few suggestions as to how,
when or why they lead to competence.

Second, the analyses that do follow from a simple, direct effects model cannot identify the more complex relationships possible when all three factors are considered at once. Of these, compensatory/risk factors (mediators) and protective/vulnerability factors (moderators) are of particular interest. It is suggested that a transactional model of stress, coping and competence be employed in which the impact of variables may be multi-directional and in which mediation and moderation effects can be detected.

Another implication of this study for future research in resilience concerns methodology. The benefits of longitudinal research in this field are clear, with questions of causality left unaddressed in this study's single-measuring point design. Further, the possible impact of response or recall bias in this study was problematic. Self-report measures relied on recall when discussing coping with the specific situation evaluated ("finding out you were pregnant"). Though temporal relationships among variables related historically in this study were of help in discussing possible causality, it is suggested that this be strengthened by using a design with multiple measuring points. It is suggested that coping with the chosen situation be evaluated as close to that event as is possible. A short delay following this crisis is suggested before competence is assessed. Finally, methodology which incor-
orporates objective measures as well as subjective measures of the variables of interest is recommended.

The final implication for future research suggested by this study is the usefulness of selecting a crisis or life-transition point as the setting in which to study resilience. Subjects in this study were very willing to share their life-stories and it was clear that most viewed their pregnancies as changing the course of their lives. Focusing on their pregnancies encouraged subjects in this study to reflect on their histories and their future goals in a way which is unusual for people not in crisis. This reflection allowed subjects to create a coherent life-story which included the crisis of pregnancy and their response to it. This subjective experience of continuity and rationale fosters the examination of the pathways to resilience. Interviews also suggest that this ability to integrate the crisis of teenaged pregnancy into one's life-story is itself a sign of resiliency.

Finally, since the population of pregnant and parenting adolescents from which this sample was drawn receives significant public resources and attention, this study's implications for policy and programs designed to serve this high-risk group are of special importance. Individual findings of use include that a problem-focused coping repertoire is associated with greater competence, that competence in one area seems to bolster competence in other
areas, and that the assumption that small, geographically stable families lead to enhanced coping or competence was not supported. In trying to build programs that foster increased competence, it is suggested that staff try to encourage a problem solving mentality in their participants and that any displayed or subjectively felt area of accomplishment be acknowledged, praised and built upon. Finally, it is suggested that staff limit the use of clinical lore in assuming which life-history experiences put a participant at greater or less risk. The research in the area of resilience cannot yet state which chronic stressors in troubled backgrounds may lead to greater risk or which kinds of backgrounds may protect from risk. All program participants must be considered in need of services and of support, and each must be considered to have personal strengths and resources upon which to draw despite histories of high-risk.
APPENDIX

INTERVIEW SCHEDULE

LIFE EVENT INTERVIEW

I would like you to tell me a little about yourself and your experiences. To help me organize what we talk about, let’s focus on different areas of your life when you were little. I’d like you to tell me about when you were younger; starting with when you were born up until you were about ten years old. First, tell me about when you were born.

PARENTS AT YOUR BIRTH
where born?
age of mother/ father
personal information about mother
  high school graduate
  employed
  living with whom
  any problems (legal, health, drugs)
personal information about father
  high school graduate
  employed
  living with whom
  any problems (legal, health, drugs)
relationship between parents
married?
IF NOT:
  how long knew each other when born
  still together when born
  father claim child as his own
  did these two have other children together
reaction to your birth
  mother
  father
  parents’ families

LIVING SITUATION
moves how many where
city and state
apartment(s), house(s)? (size and location)
Tell me about the places you lived for more than a year when you were a child
With whom did you live as a child (for each household) at the time of the move: relationship with
  mother
father
siblings (including birth order)
generational -- grandparents? extended family?
any deaths?
any marriages/ separations/ divorces
Do you remember feeling safe where you lived
Do you remember feeling like you had a place of your
own where you lived
relationship with biological mother (if not covered)
frequency of contact
quality of contact
was mother employed? Doing what?
if no mother, who took this role
what did you call this person
relationship with biological father (if not covered)
frequency of contact
quality of contact
was mother employed? Doing what?
if no mother, who took this role
what did you call this person
paternal support of mother
emotional
financial
mother or primary caretaker absences
illnesses
birth of another child
extended vacations or work-related absences
father absences

FAMILY
Tell me about your family when you were a child
who did you feel closest to
contact with extended families
What happened in your family when you did something
wrong
who disciplined
nature of punishment
Tell me about your brothers and sisters when you were
a child
ages and birth order
How did your parents (or parent and partner) get along

CARE TAKERS
did your mother work or go to school
position and hours/wk
who took care of you
if mother, then what about when she was at work
organized day care
head start
other preschool
day care home or center
after school care
When did your mother let you start taking care of yourself
after school
at night when the adults went out

HEALTH
Tell me what you know about your health when you were a child
hospitalizations or surgeries
abuse follow-up if applicable
illnesses or disabilities
Do you remember, or did anyone tell you about, anything unusual happening to you when you were a child abuse or psychiatric care follow-up if appropriate
sleepwalking, eating problem, tantrums, visions
Did anyone ever touch you in a way that made you feel uncomfortable
if yes: gender and age of person
what was relationship with the person
FOLLOW-UP IF APPLICABLE

PEERS
Tell me about your friends when you were a child.
Remember, I’m asking about when you were little, when you were in grade school and into junior high
did you have a best friend (Male or female?)
what kinds of things did you do together
how did you get along with siblings, cousins
did you have a boyfriend or boyfriends
if yes, tell me about him
what did you like to do together
were you romantic with each other
if yes, what was your physical relationship

SCHOOL
Tell me about grade school and junior high
what liked about school
what didn’t you like
what schools did you attend
did you ever change schools in the middle of a year? why?
what grades did you get in grade school
what grades did you get in junior high
did you get into fights
were you ever suspended? why?
were you absent a lot? why?
did you ever have to repeat a grade? why?
what was your favorite subject? least favorite?
did you have any trouble learning to read? math?
were you in any special classes
NOW LET'S talk about your life since you were ten years old. Try to tell me about how things were for you when you were leaving junior high and since then. I'm interested in most of the same things we've already talked about; only now I want to know about the last few years.

LIVING SITUATION

moves  how many  where
city and state
apartment(s), house(s)? (size and location)
Tell me about the places you lived for more than a year in the last few years
With whom did you live (for each household)
at the time of the move: relationship with
mother
father
siblings (including birth order, if step/half -- what was the relationship)
generational -- grandparents? extended family?
aunts/uncles/cousins -- how related?
unrelated persons (girl/boyfriends, play-family)
were these permanent residents
others who lived with you for extended times
any deaths?
any marriages/ separations/ divorces
Do you remember feeling safe where you lived
Do you remember feeling like you had a place of your own where you lived

relationship with biological mother (if not covered)
frequency of contact
quality of contact
was mother employed? Doing what?
if no mother, who took this role
what did you call this person

relationship with biological father (if not covered)
frequency of contact
quality of contact
was mother employed? Doing what?
if no mother, who took this role
what did you call this person
paternal support of mother
emotional
financial

mother or primary caretaker absences
illnesses
birth of another child
extended vacations or work-related absences
father absences

Who do you live with right now (and this last year)
relationship -- biological or not
 generational -- grandparents, great aunt
 married or not if "step"
 siblings
 aunts/uncles/cousins -- how related
 unrelated persons
What is your neighborhood like now

FAMILY
 Tell me about your family when you were a child
 who did you feel closest to
 contact with extended families
What happened in your family when you did something wrong
 who disciplined
 nature of punishment
What happens now when you do something wrong
Tell me about your brothers and sisters
 ages and birth order. how related
How did your parents (or parent and partner) get along
Does or Did anyone in your family have a physical
 or emotional problem or illness that effected you
Have drugs or alcohol ever created a problem in your family
What was your family’s financial situation
What about now

HEALTH
 Tell me what you know about your health since you were ten years old
 hospitalizations or surgeries
 abuse follow-up if applicable
 illnesses or disabilities
IN THE PAST YEAR:
 have you been satisfied with your weight
 if no, what have you done to change it
 has anything unusual happened to you psychiatric care
Do you remember any times you felt very depressed
 IF YES:
 precipitating event
 Did you ever feel so badly that you thought life wasn’t worth living IF YES
 Did you ever think about hurting yourself
 Did you ever try to commit suicide (details)

NOW:
 Tell me about your health now
 where do you get your medical care
 do you have a regular doctor
 illnesses or disabilities now
 are you satisfied with your weight now
do you exercise
do you see a counselor to discuss personal problems

IF DEPRESSION NOTED ABOVE:
Do you sometimes feel very depressed now
precipitating event
do you feel so badly that you think life isn’t worth living
IF YES:
ARE YOU THINKING ABOUT HURTING YOURSELF
ARE YOU CONSIDERING SUICIDE
FOLLOW-UP
Tell me about your menstrual cycles
when start getting periods
did you know what was happening
who told you what to expect. who helped you
were your periods regular
did you get bad cramps or have other problems
do you have problems now

SEXUAL EXPERIENCES
Tell me about your boyfriend or boyfriends from junior high and up until last year
what did you like to do together
how old were your boyfriends
How old were you when you first had sex with a boyfriend. Tell me about the experience.
who’s idea was it
nature of first sexual experience (time, where)
age of partner
relationship with partner (length, intensity)
was sex like you expected it to be why/why not?
Since you first started having sex, about how many partners have you had?
age(s)
nature of relationships
frequency of sexual activity (average per month)

Tell me about your use of birth control
first experience -- use or not why
when began using contraception (what context)
what method(s) tried
where obtained and who advised
Did this person explain how to use it and why it worked?
your attitude toward birth control use
partner(s)’ attitudes toward use

Tell me about your current boyfriend(s), if any
age
duration of the relationship
How often do you and your current boyfriend have sex
IF YES:
How much do you know beforehand that you will be having sex
did you use contraception the last time what method
how do you feel about using birth control how does your boyfriend feel

IF NO:
Did you use contraception the last time what method

PREGNANCY
Are you pregnant now
IF YES:
How far along were you using birth control when you got pregnant what method
IF NO:
Is there a chance you might be

Tell me about the first time you got pregnant
How old were you
how did you feel about it
who did you tell first
If you told them, what was the reaction of:
  your partner
  your parent(s)
  his parent(s)
  your friends
  his friends
What options did you consider
Resolution of first pregnancy (abortion, miscarriage, live birth)
How many times have you been pregnant
Resolution of each

Tell me about the last time you got pregnant
How old were you
how did you feel about it
who did you tell first
If you told them, what was the reaction of:
  your partner
  your parent(s)
  his parent(s)
  your friends
  his friends
What options did you consider
Resolution of last pregnancy (abortion, miscarriage, live birth)

OTHER SEXUAL EXPERIENCES
Tell me about any other sexual experiences you've had
Did anyone ever touch you in a way that made you feel uncomfortable
   if yes: gender and age of person
   what was relationship with the person
   what was the nature of the abuse
   how long did abuse last

IS THIS SITUATION STILL GOING ON
   IF YES: I'M GLAD YOU TOLD ME ABOUT THIS PROBLEM.
   INFORM PROGRAM DIRECTOR IMMEDIATELY AND END INTERVIEW. ASSIST IN FOLLOW-UP.

PEERS
   Tell me about your other friends these last few years
   did you have a best friend (male or female?)
   do you have a best friend now
   what kinds of things do you do together
   were you/are you friends with people in neighborhood
   have you gotten into fights? now?

SCHOOL
   Tell me about school these last few years
   what liked about school
   what didn’t you like
   what schools did you attend
   did you ever change schools in the middle of a year? why?
   what grades did you get in grade school
   what grades did you get in junior high
   did you get into fights
   were you ever suspended? why?
   were you absent alot? why?
   did you ever have to repeat a grade? why?
   what was your favorite subject? least favorite?
   did you have any trouble learning to read? math?
   were you in any special classes

Now I want to know specifically about school this last year. Did you go to school last year?
   IF YES:
      what school
      grades
      are you satisfied with those grades
      about how many days a week did you miss school this spring? Why?
      were you suspended this last year? why?
   IF NO: Why did you leave school?
   How has/will your pregnancy affect you in school
   Do you plan on going to school this year why?
   Would you like to graduate from high school
   Do you think you will graduate? why?
ALCOHOL AND DRUG USE
Have you ever tried cigarettes
IF YES:
  did you ever get hooked on them
do you smoke now? How much?
When was the first time you tried alcohol
When was the first time someone asked you to try drugs
  where were you
  who was with you (what relationship)
  if used: what type and how paid for it
When was the first time you actually tried drugs
  where were you
  who was with you (what relationship)
  what type and how paid for it
Have you had alcohol or drugs in the last year
IF YES:
  what drug(s)
  how often and how much
  in what circumstances (alone? first thing in the morning? to avoid withdrawal?)
Have you ever done something because of alcohol or drugs that you regretted?
  IF YES: tell me about it.
Do you think there was ever a time you were addicted to alcohol or drugs
  IF YES: are you addicted now FOLLOW-UP

GANG INVOLVEMENT
When was the first time someone asked you to join a gang
  where were you
  who asked (what relationship)
  what did you do/say
If involved:
  initiation?
  what have you done for the gang
  wear colors
Have you ever had trouble with the police

EMPLOYMENT/VOCATIONAL
Have you ever had a job
  what kind of work
  how old were you
  what kind of job would you like to have in the future

PARENTING (IF APPLICABLE)
Who takes care of your baby most of the time
Who takes care of him/her when you are not around
Who will care for him/her if you go back to school
Who disciplines the baby
  how
How often does your baby see his/her biological father


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Anne Louise Pelissier Montague was born in 1960 in Colville, Washington, and was raised in nearby Ephrata and Ellensburg. She attended Carleton College in Northfield, Minnesota, where she was awarded the Bachelor of Arts, cum laude, with distinction in psychology in 1982. Anne's senior thesis was entitled: "Specific learning disabilities among deaf children." Her minor concentrations while at Carleton were in Latin American studies and in education.

After three years working as Assistant Director of Residential Life/Housing at Hamline University, St. Paul, Anne entered graduate school in clinical psychology at Loyola University Chicago in the fall of 1985. Her academic work at Loyola included electives in cognitive and psycho-dynamic therapy, neuropsychology, psychopharmacology, group therapy, and statistics. Anne earned the Master of Arts degree conferred in 1989 with the thesis: "Cancer patients at diagnosis: Appraisals, coping strategies and adjustment."

Anne's clinical training included externships in inpatient psychiatry (1986) and in spinal cord injury rehabilitation (1987), both in Chicago Veterans' hospitals. In 1988, Anne trained at Michael Reese hospital, conducting
psychological assessment of deaf children and adults, and at Cook County hospital, serving inpatient and outpatient clients. Also in 1989, Anne worked half-time as a research assistant at the Ounce of Prevention.

Anne received her APA approved internship training at Cook County Hospital in 1989 and 1990. This public hospital treats Chicago’s poor and underserved populations, and offers a generalist training program with rotations in adult, child and adolescent psychology divisions. Clinical work included a variety of outpatient psychiatric and general medical clinics as well as inpatient work in triage, crisis intervention, and multi-disciplinary case consultations. Psychological, neuropsychological, educational and competency assessments were also conducted. Elective specializations at County included: AIDS services (adult inpatient, Women and Children’s outpatient clinic, and children’s HIV support group) and family therapy.

Since completing internship in fall, 1990, Anne has worked half-time in a community agency serving Chicago’s northwest side. Anne offers individual, family and marital therapy for adults, adolescents and children. She also leads educational and therapeutic groups. Anne consults for the affiliated K-8 grade school and conducts psychological and intellectual assessments.

Anne lives in Skokie, Illinois with her husband, Jim, and two daughters, Clara and Alice.
DISSERTATION APPROVAL SHEET

The dissertation submitted by Anne P. Montague has been read and approved by the following committee:

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the committee with reference to content and form.

The dissertation is, therefore, accepted in partial fulfillment of the requirements for the degree of Ph.D.

8/15/95
Date

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