Stressors, distress, and resources: reciprocal and buffering influences during the transition from adolescence to adulthood

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Stressors, distress, and resources:
Reciprocal and buffering influences during the transition from adolescence to adulthood

by

Lora J. Ebert Wallace

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

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Stressors, distress, and resources:

Reciprocal and buffering influences during the transition from adolescence to adulthood

Lora J. Ebert Wallace

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ABSTRACT

Consistent with a life course and social contextual approach, this study proposes a reciprocal relationship between stressful life events and emotional distress during the transition from adolescence to early adulthood. Study predictions included continuity of events and distress, and reciprocal causation between events and distress. SEM analysis of longitudinal, prospective data from 526 white, rural targets largely supported study expectations. Stressful events and distress showed stability over time, and a degree of reciprocity between events and distress was observed. At each of three time points, stressful events predicted psychological distress, and psychological distress at mid- and late-adolescence predicted events at early adulthood. Possible direct and buffering effects of resource were also examined, including, financial, self-concept, and social support. Analysis of resource models revealed a direct and buffering influence of financial resources.
GENERAL INTRODUCTION

Most of what is known about the stress process comes from research on adults. Based on this research literature, what do we know about the relationship between acute stressors and psychological distress? The latest research reveals that the relationship is most likely reciprocal; whereby unwelcome events evoke a response of distress in the form of symptoms of psychiatric illness, and the experience of living with psychiatric symptomology leads to a greater number of negative life events (Kessler, 1997). While the association between stressful life events and psychological distress remains a less-studied phenomenon among children and adolescents as compared to adults (Compas & Hammen, 1994; Goodyer, 1999; Ystgaard, Tambs & Dalgard, 1999), there is support for the idea that the relationship is also reciprocal among young people (Rutter, 1994).

Rates of depression have increased over the course of this century, and this accelerated trend includes children and adolescents (Larson & Essau, 1999). Previously-held myths about the absence of mood disturbances among children and adolescents have been debunked by clinicians and researchers (Gotlib & Sommerfeld, 1999). Symptoms of depression and anxiety among young people have become a topic of interest to social researchers, and the importance of and need for further research in this area is well-established. Thus, we seek to contribute to the literature by furthering understanding of psychological distress in the stress process.

The impetus for the study comes from two major research traditions: studies of the stress process and the investigation of life course development (Rutter, 1994; Thoits, 1995). Despite the extensive literature on life events and distress, there has been only limited study of
the stress process for adolescent and young adult populations (Compas & Hammen, 1994; Goodyer, 1999; Ystgaard et al., 1999). The longitudinal, prospective design of this study overcomes many methodological limitations found in previous studies (Kaplan & Damphouse, 1997). Using a longitudinal, prospective design, the present study evaluates reciprocal changes in stressful conditions and emotional distress during the transition from adolescence to early adulthood, and also considers resources that may alter the hypothesized relationships. The design of this study allows for the consideration of both buffering and main effects of resource variables over time.

Dissertation Organization

This dissertation contains a manuscript submitted for publication to the journal Developmental Psychology. After the manuscript appear general conclusions, appendices, and references cited.
LIFE STRESS DURING THE TRANSITION FROM ADOLESCENCE TO ADULTHOOD:
PROCESSES OF RISK AND RESILIENCE

A manuscript to be submitted for publication in the journal
Developmental Psychology

Lora J. Ebert Wallace and Rand D. Conger

Introduction

This report examines the stress process during the transition from adolescence to adulthood. Success in coping with stressful life events may be particularly important during adolescence, as individuals encounter a substantial period of transition. During this life stage, persons negotiate the crucial shift first from childhood to adolescence, and later from adolescence to adulthood. Developmental theorists point out that individuals become more vulnerable to distress during periods of biological, social, and psychological transition (Antonovsky, 1981). Adolescence presents change in all three of these areas, and is, therefore, a potentially unique and particularly important developmental period for studying the complicated relationships among stress, distress, and social or personal resources that might modify these relationships. In the following sections we describe the specific goals of this investigation and the conceptual model that guides the analyses. Previous empirical findings are reviewed in relation to the various theoretical issues to be addressed.

The Present Study

This study attempts to advance knowledge of the stress process among adolescents by investigating specific hypothesized relationships between negative life events and psychological distress across the years of adolescence and early adulthood. We proposed that
experiencing stressful life events during early or middle adolescence would increase risk for later emotional distress and negative life events. We also hypothesized that the earlier experience of distress will make adolescents more vulnerable to both later events and distress. Specifically, this study examined the prospective, reciprocal relationship between negative life events and symptoms of psychological distress as experienced at middle-adolescence, late-adolescence, and early adulthood, taking into consideration the possible main and buffering effects of personal and social resource variables. Gender differences in the hypothesized relationships were examined, as warranted by previous work (Compas, Orosan, & Grant, 1993). The impetus for the study comes from two major research traditions: studies of the stress process and the investigation of life course development.

Several theorists have called for a new direction in life event research consistent with a life course or social contextual perspective, placing events in the context of people's experiences over time. Central to this area of inquiry is the notion that stress effects are, for the most part, not isolated, random events. Rather, stressors are considered in the context of the prior history of the individual. People actively engage with the environment, and the ways in which they do so play a major part in the outcomes they experience. Because this interaction between person and environment influences multiple domains of life experience, several researchers have advocated a move away from studies which consider a group of individuals who all experienced the same stressor to the study of multiple stressors in relation to risk of negative outcomes over time (Rutter, 1994; Thoits, 1995). These ideas guided the development of the present investigation.

An especially important aspect of this life course or social contextual orientation is an
emphasis on long periods of time and consideration of life experiences and outcomes over the life course, rather than focusing on fixed critical periods of development. While research suggests that some experiences leave a greater imprint at certain times of life, findings to date have not yielded full understanding of these mechanisms (Elder, 1996; Caspi, 1987; Kandel, Davies, & Baydar, 1990; Rutter, 1994). In contrast to research focusing on narrow episodes of life, longer-term, prospective research can provide the opportunity to examine the causal mechanisms between stressful events and psychiatric symptomology across two or more developmental stages (Hakim-Larson & Essau, 1999). The longitudinal, prospective design of this study overcomes many methodological limitations found in previous studies (Kaplan & Damphouse, 1997).

These limitations were outlined by Kaplan and Damphouse (1997), who pointed out that many earlier studies: 1) were conducted on small, unrepresentative samples (such as clinical samples), restricting generalizability; 2) were cross-sectional, making causal inferences harder to establish; 3) failed to control for earlier measures of the dependent variable (distress); 4) only examined the influence of events on distress, rather than considering the possible mutual influence of these two types of variables; 5) focused on only one event or a few events; and 6) examined only the short-term consequences of. The design of this study overcomes these limitations in design, providing information about the stress process at adolescence and early adulthood from prospective, longitudinal data for the first time. The application of the mutual influence hypothesis to prospective, longitudinal data provides a unique contribution to the literature on adolescence.
The Conceptual Model

Stability, Main Effects, and Reciprocity in the Stress Process

The conceptual model in Figure 1 indicates the general relationships of interest in this study. The model proposes mutual influence between negative life events and symptoms of psychological distress over the years of middle- and late-adolescence and early adulthood. The model proposes that stressful life events occurring during the past year will affect the level of psychological distress at year's end (path B). The model proposes, for instance, that a young person experiencing a number of stressful events in the past year (e.g., a good friend moving away, death of a loved one, and a serious personal illness) will show elevated symptoms of depression and anxiety at year's end. The greater the number of stressful events experienced, the greater the effect will be on the mental health of these young people. In a reciprocal process, symptoms of distress were predicted to increase experiences involving negative life events during later data collection points (paths C and D). The model proposes that young people experiencing higher symptoms of depression and anxiety will encounter a greater number of stressful life events over the next several years. For instance, depressed and anxious young people will be more likely to encounter problems in family and romantic relationships, and at school and work. The model also proposes that negative life events and symptoms of depression and anxiety will show continuity over the years included in the study (path A). The relatively simple model provided in Figure 1 follows from our theoretical perspective that characteristics of the individual affect the social environment which, in turn, influences psychological adjustment. An important aspect of the model involves the prediction of change in both events and distress. That is, because later stress and psychological functioning were
predicted controlling for their earlier levels, the model proposes that negative events will lead to relative increases in emotional distress and vice versa (Lorenz, Conger, Simons, & Whitbeck, 1995).

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Despite the extensive literature on life events and distress, there has been only limited study of the stress process for adolescent and young adult populations (Compas & Hammen, 1994; Goodyer, 1999; Ystgaard et al., 1999). The following review of preliminary empirical support for our conceptual model highlights investigations of the adolescent stress process. Given the interests of this study, the literature review is confined to prospective longitudinal research, and to research using measures of symptoms of psychological distress among community populations, rather than psychiatric diagnosis or clinical samples.

Environmental stress has been used both as an independent and as a dependent construct in the stress literature (Ensel & Lin, 1989). However, most attention has been focused on the hypothesized causal path from life events to later distress. Fewer studies have examined a possible causal path from distress to later events, and even fewer have considered the possibility of mutual influence between the two. Researchers using a limited prospective design, following subjects for two time points, have found stressful events to impact later distress.

In a prospective study consisting of an initial assessment and an 18-month follow-up, Ystgaard and researchers considered the impact of negative life events on later psychological
distress among high-schoolers (1999). These researchers found events to impact later distress for adolescent girls. Longer-lasting adversities were found to impact later distress for both boys and girls. Leadbeater and researchers (1999) examined gender differences in reactivity to negative life events in a two-wave prospective study. These researchers found that stressful life events led to increased internalizing and externalizing behaviors for boys and girls. In a two-wave study consisting of grandparents, their adult children, and their adolescent or young adult grandchildren, Stallings, Dunham, Gatz, Baker, and Bengston (1997) examined the relationship between major life events and changes in psychological well-being. Among these young adults, the number of negative life events experienced predicted an increase in negative affect over time. Undesirable life events among these young people were particularly detrimental to their mental health. DuBois, Felner, Brand, Adan, and E.G. Evans (1992) surveyed junior-high students and their parents at two time points (2-yr-lag). Students were asked to appraise 18 uncontrollable life events as well as report perceived level of social support and symptoms of depression, anxiety, and self-appraisal. Major events at time one significantly predicted distress at time two, after controlling for level of distress at time one (Du Bois et al, 1992). Sigel and Brown (1988) surveyed adolescent girls at two time-points, assessing stressful life circumstances, illness, and depressed mood. Negative circumstances were found to increase the likelihood of depressed mood at time 2 in the absence of positive circumstances. Cohen, Burt, and Bjorck (1987) assessed the effects of negative life events among students at 7th grade and again at 8th grade. Controllable and uncontrollable life events at time one predicted distress at a later time for boys and girls.

The findings just reviewed indicate that stressful events lead to distress at a later point
among adolescents. More limited evidence also suggests that distress contributes to a greater number of future undesirable events as well. Kaplan and Damphouse (1997) examined the possibility of reciprocity between stressful events and psychological distress. These researchers considered psychological symptoms of distress assessed around age 13 and again around age 26 in a large, prospective study. Life events were retrospectively assessed at time 2, asking respondents to identify the occurrence and timing of positive and negative life events since time 1. Negative life events at time 1 showed independent effects on psychological distress at time 2. Kaplan and Damphouse also found support for the disruptive effects of psychological distress on later outcomes. The researchers found that high levels of psychological distress at time 1 led to both the establishment and disruption of social relationships at time 2, and to decreases in the likelihood of achievement in school and work.

As this review shows, the limited literature suggests that stressful events lead to psychological distress, and that distressed adolescents will experience more negative life events in the future compared with those not suffering from symptoms of distress. Prospective studies did not examine the relationships of interest for more than two time-points, however, thus limiting the scope of the investigations in terms of the life course. Only one prospective study examined the possibility of mutual influence between events and symptomology (Kaplan & Damphouse, 1997).

The goal of the present study is to address these deficits in previous research by examining the mutual influence of events and distress over three waves of data spanning six years and across the important developmental transition from adolescence to early adulthood. Theory and earlier research, however, also suggest that specific social and personal resources
may influence or even alter the reciprocal process just described. We now turn to this issue.

**Main and Moderating Effects of Personal and Social Resources**

A central focus of research on the stress process involves the identification of personal and/or social resources that may reduce the destructive pattern of reciprocity proposed by the conceptual model outlined in Figure 1. Protective factors have been defined as, “influences that modify, ameliorate, or alter a person’s response to some environmental hazard that predisposes to a maladaptive outcome” (Rutter, 1985). Protective factors in this study therefore refer to the operation of personal attributes, social relationships, or life conditions that reduce the likelihood of distress even in the presence of stressful events. Resources such as social support and personal competence may serve as protective factors by reducing vulnerability to stressful life events or conditions when they occur. Additionally, resources may directly reduce both exposure to stressful life events and also psychological distress (Gore & Eckenrode, 1994; Pearlin, 1999). Hakim-Larson and Essau (1999) point out that protective factors are best studied over time, with prospective, longitudinal data. The design of this study allows for the consideration of both buffering and main effects of resource variables over time.

Especially important for the present investigation, Ensel and Lin (1991) have identified several theoretical scenarios whereby resources may influence the relationship between stressors and distress. The resources may be internal or external, innate or acquired. Generally, Ensel and Lin discussed models suggested by what they label *distress-deterring* theory and by *coping* theory. Distress-deterring theory describes a situation in which the presence of personal or social resources reinforces an individual's psychological health such
that the onset of distress in any situation is less likely. The three types of deterring models posit that resources exert a direct influence on stressors and distress, as well as on the presence or absence of causal effects between stressors and distress. The distress-deterring hypotheses are in contrast with the more traditional coping theory, which describes resources as forces which are mobilized in response to stress, and serve to alleviate distress.

Consistent with Ensel and Lin (1991), Figure 2 illustrates the proposed moderating and main effects of the resource variables (self-concept, social support both within and external to the family, and financial well-being) investigated in the present study. Our theoretical model proposes that those adolescents who experience lower financial need, higher self-esteem and mastery, and warm, supportive social relationships should benefit from the protective properties of these resources.

Figure 2 illustrates the hypothesized moderating and main effects for the resource variables, based on the distress-deterring and coping models proposed by Ensel and Lin (1991). As shown in Figure 2 (Panel A), the independent model proposes main effects of resources on distress. The independent model depicts a scenario in which resources inoculate the individual against distress, regardless of the level of stress in the individual's life. According to this model, whether the level of stress is high or low, resources serve to alleviate distress (path a). For example, a warm, supportive relationship with mother should provide adolescents with a nurturant environment that reduces their risk for psychological distress,
independent of the level of stress in their lives. The stress-suppressing model (Panel B) also proposes main effects of resources on distress, but adds a main effect on stressors as well. The stress-suppressing model suggests that resources serve to reduce the likelihood that stressful situations will arise (path b), while at the same time directly reducing distress (path a). For instance, high self-esteem and mastery should result in more planful lifestyles, leading to choices and conditions inconsistent with the generation of stressful events.

The stress-conditioning model (Panel C) proposes a buffering effect of resources rather than main effects. The stress-conditioning model maintains that resources will modify the relationship between negative life events and distress (path c). That is, when the level of resources is high, stressful events should be unrelated or only modestly related to distress. When resources were low, however, the relationship between stress and distress should increase in magnitude. For example, social support of friends may provide an adolescent with important skills required to adapt successfully to stress, lessening the impact of NLEs on distress, consistent with the stress-conditioning model.

The coping models are illustrated in Figure 2, Panel D. The deterioration model is a mediational model, whereby resources intervene in the relationship between stressors and distress (path e). Stressors carry out their weakening impact on resources before their exacerbation of distress takes place. An individual's resources, weakened by the presence of stress, lead to further distress in the individual, mediating the direct path from stressors to distress. In the counteractive model resources are mobilized by the high levels of stressors, with the mobilization of resources serving to reduce the impact of stressors on distress.

Figure 2 also illustrates our previous hypothesis that negative life events and
symptoms of distress will show continuity over time. Path d in all four models in Figure 2 proposes that stressful life events experienced in the past twelve months should lead to symptoms of psychological distress experienced in the past week. We next briefly review literature regarding each of the resource variables used in the present study.

The Resource Variables

As the following section illustrates, there is evidence that resources may act as protective factors in conditioning the connection between stressful events and increasing psychological symptomology, and may directly impact stressors and distress (Pearlin, 1999). Three categories of protective factors/resource variables are emphasized in the literature: 1) personal attributes of the individual (such as self-esteem), 2) social resources, including a) affectional ties within the family as well as b) external support systems (such as peer support), and 3) financial resources (such as the meeting of material needs) (Aneshensel, 1999; Werner, 1989; Essau & Merikangas, 1999). Based on this literature, we considered four important resources that may influence the lives of adolescents and young adults: 1) self-esteem and mastery, 2) social support from mothers, 3) social support from friends, 4) and the meeting of basic material needs. We next discuss these resource variables one at a time.

Self-concept. Consistent with the focus of this study, there is evidence for a direct influence of self-concept on adolescent mental health (Hammen, 1988; Tems, Stewart, Skinner, Hughes, & Emslie, 1993; Liu, Kaplan, & Risser, 1992; Rosenberg, Schooler, & Schoenbach, 1989), as well as evidence for a protective influence (Brook, 1989; Metalsky, Joiner, Hardin, & Abramson, 1993; Aneshensel, 1992). In a two-wave prospective study of children and adolescents, Hammen (1988) found cognitions about self-efficacy and self-worth
to directly impact later symptoms of affective disorder while controlling for earlier affective symptoms. Others also have found that self-esteem is negatively associated with psychological distress among adolescents (Tems et al., 1993; Liu et al., 1992; Rosenberg et al., 1989), and Brook and researchers (1989) found that self-esteem also buffers the relationship between depressed mood and parental conflict. Mastery, or sense of control, has been associated with adaptive coping in the face of stressful events among adolescents (Aneshensel, 1992). Targets' self-esteem and mastery were two indicators of self-concept in this analysis.

Social Relationships. Research on the stress process among adolescents has indicated two potentially important areas of social support: familial relationships and peer relationships (Goodyer, 1999).

**Relationship with mother.** There is evidence for the direct impact of quality of family relations on adolescents’ mental health (Walker & Greene, 1987; Rubin et al., 1992; Leadbeater, 1999), and for the buffering role of family relations, where positive family environment serves as a protective mechanism against the negative impact of stressful life events (Masten et al., 1987). Family cohesion has been found to directly influence level of psychiatric symptomology (Walker & Greene, 1987; Rubin et al., 1992), to directly reduce stressful events (Leadbeater, 1999), and to buffer the impact of stressful events on symptomology (Rubin et al., 1992). Aro, Hanninen, and Paronen (1989) found that adolescent boys who had poor relations with at least one parent showed a bigger reaction to life events in the form of symptoms of distress. In this analysis, social support from mother to target adolescent was the measure of relationship with mother.

**Friends.** Research indicates that access to close, confiding relationships with friends is
also an important resource for adolescents. Adolescents with nonsupportive families may particularly seek outside support from peers and other adults (Bowen, Kerr, & Pelletier, 1995; Werner, 1989; Hakim-Larson & Essau, 1999). There is evidence for a main effect of friendships on adolescent psychological distress (Goodyer, 1985; 1990). Additionally, friendships and confiding relationships with non-parental adults have been shown to buffer the effects of stress (DuBois et al., 1992; Hakim-Larson & Essau, 1999). Poor friendships have been associated with slower recovery from psychiatric disorder (Goodyer, 1985) and are associated with psychological distress (Goodyer, 1990). Social support from best friend was the measure of friendships used in this study.

Financial resources. Financial resources are a potentially significant factor in adolescent’s lives. Research on children and adolescents shows that various types of economic stress are associated with higher levels of psychological distress (Takeuchi, Williams, & Adair, 1991; Gore, Aseltine, & Colton, 1992). In addition to the direct relationship between economic resources and psychosocial outcomes, there is evidence that socioeconomic status buffers the effects of stressful life events on distress for adolescents and children. (Gore et al., 1992; Masten et al., 1987). Masten et al. (1987) found that children in higher SES environments did not show increases in disruptiveness as a result of negative life events, whereas lower SES children’s disruptiveness increased with the occurrence of stressful life events. The measure used in this study captures the family’s perspective that everyday basic material needs of the target adolescents were met.
Methods

Sample and Procedures

The data for these analyses come from the Family Transitions Project at the Institute for Social and Behavioral Research. This study combines the participants from two earlier samples, the Iowa Youth and Families Project (IYFP) and the Iowa Single Parent Project (ISPP). As shown in Figure 1, we consider information from the 526 target adolescents (270 girls and 256 boys) at three different developmental stages: middle adolescence (1991, mean age = 15), late adolescence (1994, mean age = 18), and early adulthood (1997, mean age = 21). These time periods effectively cover the transition from adolescence to early adulthood.

The IYFP began in 1989 and included 451 families. The sample was selected from a rural, predominately agricultural eight-county area in North Central Iowa. Families selected had at least two children (the target adolescent in seventh grade and a sibling within four years of age of the seventh grader) at the beginning of the study. About 78 percent of the families who met the criteria for inclusion in the study agreed to participate. Because there were essentially no minorities living in this rural area, all families in the sample were white. The average family income for the IYFP sample in 1989 was $33,900. In 1989 the median ages for the target adolescent, father, and mother were 12, 39, and 37 years, respectively. The median years of education for both parents was 13, quite comparable to the median of 13.1 years for whites between 35 and 44 years of age in the United States in 1989 (U.S. Bureau of the Census 1991).

The SPP was initiated 2 years later. Data came from 109 mother-only families with adolescents the same age at the time as the IYFP targets and another child within 3 years of
the target’s age. The cases were randomly selected from the cohorts of 9th-grade students in living in approximately two thirds of all counties in Iowa, excluding university communities and larger metropolitan areas. Mothers were divorced or permanently separated from their husbands, the separation happened in the past 2 years, and the husband or ex-husband was the biological father of the target. All subjects were white. Median family income for the mother-headed families was $21,521, including child support. Mean level of education for mothers was 13 years. In 1991 median ages for target adolescent and mother were 14 and 38 years, respectively. The SPP sample underwent the same interviewing procedures as the IYFP, with the exception of changes for family structure.

The IYFP and the ISPP use the same measures for constructs, allowing these two data sets to be merged in 1991. Beginning in 1994, the IYFP and ISPP samples were combined at the point of data collection to form the Family Transitions Project. This sample provides the data for the years 1994 and 1997. In 1991, the total IYFP sample consisted of 407 families/targets, and the ISPP consisted of 109 families/targets, yielding a listwise sample in 1991 of 516. The target adolescents from the two projects were matched in terms of age and grade level in 1991. In 1994, the IYFP sample had gained some previously lost cases, rising to 426, and the SPP sample was 105, with a total sample size of 531, a gain of 15 cases, about 3%. In 1997, the last data point of this analysis, there were 418 IYFP and 93 ISPP cases, for a total of 511. Thus, from the first data point of this analysis to the third sample attrition was 5 cases, less than 1%. From the second data point to the third, attrition was 20, about 3%. These figures reflect negligible attrition and increase confidence that the final sample 1997 was not markedly different than the beginning sample in 1991.
Measures

**Negative Life Events.** In this study we used a checklist of negative life events to determine the level of stress experienced by the participants. Checklists as measures of experienced stress are based on Selye's (1956) idea that stress is made up of nonspecific biological changes resulting from environmental events. Dohrenwend (1973) also argued that changes, whether positive or negative, are what generates stress. While systems of interviews and ratings determine contextual threat, life event checklists remain the dominant method for assessing stress among researchers who believe that the undesirability of events is the most important issue and that stress cumulation has a generic effect separate from content differences among events (Turner & Wheaton, 1997).

Adolescents reported on 35 events in 1991 and 1997 and 34 events in 1994. The checklist varied at each data collection point, but all were derived from Swearington & Cohen's Junior High Life Experiences Survey, which has demonstrated validity as a measure of adolescent life stress (Swearington & Cohen, 1985). As targets aged over the study years, the stressful life events checklist was altered to more accurately reflect their lives. For instance, in 1997, personal divorce and extramarital affair items were added to the checklist. These changes as participants reached early adulthood were partially derived from the PERI Life Events Scale (Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978). Respondents indicated "yes" or "no" whether events (checklists appear in Appendix 2) had occurred over the past twelve months. The items in the checklists were randomly divided and summed to form three indicators of the construct for stressful life events.
Symptoms of Depression and Anxiety. The SCL-90-R (Derogatis, 1983) was used to measure symptoms of emotional distress. This instrument has demonstrated validity as a measure of child and adolescent psychological distress (Essau, Hakim-Larson, Crocker, & Dobson, 1999). In this analysis, the anxiety and depression subscales were used. Respondents were asked to report on a five-point scale how much discomfort they had experienced in the past week related to each symptom. Responses range from (1) no discomfort to (5) extreme discomfort. The higher the scores on the measure, the greater the feelings of distress. Thirteen items (such as "feeling blue") were included in the depression measure, with alpha coefficients of .88 in 1991, .91 in 1994 and .91 in 1997. Ten items (such as "feeling fearful") were included in the anxiety measure, with alpha coefficients of .86 in 1991, .90 in 1994 and .91 in 1997. These depression and anxiety subscales were randomly divided into three groups to form three indicators of the construct for psychological distress.

Self Concept: Self-esteem and Mastery. In 1994 participants completed the Rosenberg (1989) self-esteem scale and the mastery scale developed by Pearlin (Pearlin, Menaghan, Lieberman, & Mullen, 1981). The Rosenberg has demonstrated validity as a measure of self-esteem for adolescents (Simmons, Rosenberg, & Rosenberg, 1973; Rosenberg, Schooler, & Schoenbach, 1989). The self-esteem measure includes ten items such as, "I take a positive attitude toward myself," and "I feel I do not have much to be proud of." Mastery consists of seven items such as, "Sometimes I feel that I'm being pushed around in life," and "What happens to me in the future mostly depends on me." Answer categories ranged from (1) strongly agree to (5) strongly disagree. These items were coded so that a high score reflects high self-concept. Reliability coefficients were .90 and .83 in 1994 for self-esteem and
mastery, respectively. Self-esteem and mastery were used as two indicators of the construct for self-concept.

**Social Support from Mom.** Social support from mother was assessed using the Social Provisions Scale (Cutrona & Russell, 1987). In 1994 target adolescents responded to twelve questions regarding relationship with mother, such as “I can depend on my mother to help me if I really need it,” and “I feel my competence and skills are recognized by my mother.” Answer categories ranged from (1) strongly agree to (5) strongly disagree. These items were coded such that a high score reflects a high degree of social support from mom. The reliability coefficient for the scale was .90. This scale was used as the indicator of the construct for social support from mother.

**Social Support of Friends.** In 1994 target adolescents responded to the same social support questions regarding best friend as they did regarding mother. This Social Provision Scale was used as the indicator of the construct for social support of friends. The alpha for this scale was .88.

**Financial Resources.** Information regarding family financial conditions was reported by mothers in 1994. The measure of material needs consists of six items. In 1994 mothers indicated on a scale from (1) strongly agree to (5) strongly disagree whether their family had sufficient resources to meet needs. These needs include: a home, clothing, furniture or household equipment, a car, food, and medical care. The items were recoded so that a high score reflects a low level of unmet material needs. This measure captures the degree to which the targets were able to meet basic needs of life. The scale was randomly divided into three indicators of the construct for low financial need. Reliability coefficients for unmet material
needs in 1994 were .92 for the entire scale, and .84, .87, and .76 for the three indicators. Appendix B provides the intercorrelations between all study indicators.

Data Analysis

Structural equation modeling in LISREL 8 was used to analyze the predicted mutual influences between negative life events and psychological distress (Figure 1). Reciprocal relationships between stressful events and symptoms of distress were assessed at each of the three time points in the structural model: 1991 (middle-adolescence), 1994 (late-adolescence), and 1997 (early adulthood). Use of prospective, longitudinal data allows for examination of processes over time, and assures correct temporal ordering of hypothesized predictor and response variables, thus allowing for stronger causal inferences than cross-sectional research designs (Rutter, 1985; Hakim-Larson & Essau, 1999). That is, the design of this study places it in a stronger position to make claims about causation between stressful life events and psychological distress compared to cross-sectional designs.

The present study utilizes an alternative approach to the problem of missing data. Missing cases on one variable, or in one wave are not uncommon when multivariate, multiwave data are used. As the number of data collection points increases, so does the number of incomplete cases as a proportion of the total data set. Schafer (1997) asserts that deleting cases with missing data is inefficient and creates an incomplete, and therefore biased, sample of the inferred population. In this analysis, we replaced missing information in our data using Estimation Maximization algorithms in SPSS, which finds maximum likelihood estimates for parametric models when complete data are not observed (Schafer, 1997). Analyses of study models were conducted separately using either listwise deletion of cases
with missing data or EM algorithms in SPSS. These analyses yielded identical outcomes, so the results using imputed data are provided here.

The research literature suggests gender differences in reactions to stress (Walker & Greene, 1987; Gore et al., 1992). In order to determine whether gender differences existed among these participants, analyses were conducted separately for boys and girls. Inspection of the results indicated very little difference between the findings for males and females. Gender differences in the models were further investigated by testing each path using subgroup comparisons (Bollen, 1989). In this procedure, if the chi-square changes significantly when a null model which sets all paths equal for each group is compared to a model which releases one path at a time to assume an unrestricted value, the released path is statistically different between groups (Bollen, 1989). The analysis revealed no significant differences between the models estimated for boys and for girls. Therefore, the results presented here are based on the analysis of all cases.

Structural equation modeling in LISREL 8 and ordinary least squares regression equations in SPSS were used to test hypothesized direct and moderating effects of resource variables (Figure 2). Structural equation models were used to test the direct effects (independent and stress-suppressing models). In order to avoid splitting the sample and thus losing information, analysis of moderating relationships were conducted with continuous variables using OLS regression. We next discuss the results of the mutual influence model (see Figure 1), followed by discussion of the distress-deterring and coping models (see Figure 2).
Results

Table 1 provides intercorrelations among study constructs used in the SEM analyses. These latent constructs were based on the multiple indicators described in the measures section. The correlations were consistent with expectations, and most were significant.

Following the theoretical model, earlier stressful life events were significantly correlated with later events. As Table 1 shows, 1991 events were positively correlated with 1994 events (.22) and 1994 events were positively correlated with 1997 events (.19). Earlier psychological distress was very strongly correlated with later distress. Distress at 1991 year’s end was positively correlated with 1994 distress (.50), and 1994 distress also correlated strongly with 1997 distress (.46). Also consistent with study predictions, earlier stressful events were significantly correlated with later psychological distress. Stressful events reported over the past twelve months in 1991, 1994, and 1997 were significantly positively correlated with psychological distress at years’ end (.47, .35, .44, respectively). Consistent with the mutual influence model, earlier psychological distress was also positively correlated with later events. Psychological distress in 1991 was not significantly correlated with stressful events in 1994 (.09), but was significantly correlated with events in 1997 (.28). Psychological distress in 1994 was significantly correlated with stressful events in 1997 (.17).

Also shown in Table 1 are the construct correlations for the 1994 resource variables. With the exception of the correlation between financial resources and social support of friend (.05), all intercorrelations between resources were significant. Consistent with Ensel and Lin’s deterioration hypothesis (see Figure 2), earlier stressful events (1991) were negatively correlated with 1994 resources. These correlations were significant for financial resources (−...
.24) and for mothers' social support (−.11). Consistent with the independent and stress-suppressing models shown in Figure 2, 1994 resources were negatively correlated with later stressful events and with psychological distress. The negative correlations between all four resource variables in 1994 and psychological distress in 1997 were significant, providing strong preliminary support for the independent model. Providing support for the stress-suppressing model, three of the four negative correlations between 1994 resources and 1994 negative life events were significant, with financial resources not reaching statistical significance (−.08).

Table 1 about here

SEM Analysis of the Mutual Influence Model

Figure 3 shows the results of the structural equation analysis for the mutual influence model. Although not shown in the figure, the error terms were allowed to correlate for like indicators across data points. The results provide support for the general relationships proposed in this study. As shown in Figure 3, symptoms of psychological distress show moderate stability during the transition from adolescence to adulthood. For instance, the coefficient from distress at middle-adolescence (1991) to distress at late-adolescence (1994) was significant at $\beta = .45$, and from late-adolescence to early adulthood at $\beta = .39$. The coefficients from 1991 to 1994 stressful events ($\beta = .16$) and from 1994 to 1997 stressful events ($\beta = .16$) were weaker than the stabilities for psychological distress, but were significant.
The relatively weaker stability of events over time compared to psychological distress was probably due to the measures used. The measures of anxiety and depression at each time point were identical, while the stressful life events checklist differs, having been varied according to target age (as discussed in the measures section).

As shown in Figure 3, the analysis supports the assumptions of the mutual influence model. For instance, the impact of stressful events over the past year on distress over the past week was significant, with earlier events predicting later distress for data collected in 1994 ($\beta=.30$) and 1997 ($\beta=.38$). As shown in Figure 3, the path from psychological distress in 1991 to events reported in 1994 ($\beta=.02$) and from distress in 1994 to events reported in 1997 ($\beta=-.03$) were not significant. However, consistent with study predictions, the six-year path from distress in middle-adolescence (1991) to stressful events in early adulthood (1997) was significant ($\beta=.30$). Thus, while all hypothesized paths were not significant, the mutual influence model was generally supported by these results. The fit of the model was also good, with an adjusted goodness-of-fit index of .94.

**Evaluation of Main Effects for the Distress-Deterring and Coping Models**

Figure 2 shows the distress-deterring models (Ensel & Lin, 1991). Here, these models are used to explore the role resource variables (financial resources, personal resources, social support from mother and from friends) play in the stress process. The independent, stress-suppressing, deterioration, and counteractive models were tested using SEM, while the stress-
conditioning model was tested with OLS regression equations.

The independent distress-deterring model proposes that stressful life events increase later psychological distress, while resources concurrently decrease distress. The stress-suppressing model proposes that resources will not only decrease later distress, but will also lead to fewer stressful events. The stress-suppressing model therefore includes paths from earlier resources to later events and later distress. The deterioration model proposes that earlier stress reduces later resources, while the counteractive model proposes that earlier stress strengthens later resources. In order to concurrently test the hypotheses of these models, a path from earlier stressful events to later resources and paths from earlier resources to later distress and to later events were added to the mutual influence model (as shown in Figures 4 through 7). Analysis was conducted separately for each resource variable included in this study (financial resources, self-concept, and friends' and mothers' social support).

Financial Resources. Analysis with financial resources as the resource variable provides support for the independent model of distress-deterrence (Figure 4). Financial resources in 1994 predict lower distress in 1997 ($\beta=-.07$), while the positive impact of stressors on distress remains significant ($\beta=.36$). As targets navigate a significant developmental transition, financial resources appear to be important in determining good mental health. The model in Figure 4 also provides support for the deterioration model, with 1991 stressful life events negatively predicting high financial resources in 1994 ($\beta=-.24$).
Thus, earlier stress not only directly impacts later psychological health, but also acts indirectly by reducing access to resources valuable in coping with stress.

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**Self-concept.** Results of the distress-deterring and coping model including self-concept as the resource variable provide support for the deterioration model only. As Figure 5 shows, stressful events in 1991 significantly reduce feelings of competence at late-adolescence (1994) ($\beta=-.15$). As with financial resources, earlier stressors appear to deteriorate later personal resources, weakening coping for adolescents. Self-concept at late-adolescence, however, does not significantly impact later events or psychological distress in the analysis in Figure 5. The lack of a significant relationship between self-concept at middle-adolescence (1994) and later events and distress is not consistent with the construct correlations shown in Table 1. The zero-order correlation between 1994 self-esteem and mastery and 1997 stressful events ($-.11$) and psychological distress ($-.31$) were significant. In the main effects model, however, this relationship was no longer significant. The effect of self-concept on later distress and events may be indirect through other relationships represented in the model. For instance, 1994 events and 1994 self-concept were correlated at $-.21$, with the path from 1994 events to 1994 distress at $\beta=.27$. 1994 self-concept and distress were also strongly correlated in the model ($-.47$), and the path from 1994 distress to later distress was highly significant ($\beta=.37$).
Social Support. Analysis of distress-deterring and coping models including mother’s and best friend’s social support provides support for the deterioration model only. As Figure 6 shows, social support from mother at late-adolescence (1994) was significantly weakened by stressful events in middle-adolescence (1991) ($\beta=-.15$). Additionally, Figure 7 shows that social support from best friend was also negatively impacted by earlier negative life events ($\beta=-.11$). However, this social support from family and friends does not significantly impact stressful events or psychological distress experienced at early adulthood (1997). As with self-concept, zero-order correlations between 1994 social support measures and distress and events in 1997 were significant. Also as with self-concept, these significant relationships disappear in the context of the mutual influence model.

Evaluation of Moderating Effects. Ordinary-least-squares regression equations were used to test the stress-conditioning models for each resource variable. The stress-conditioning model (Model C in Figure 2) proposes that resource variables moderate the relationship between negative life events and distress. In these analyses, psychological distress in 1997 was regressed on 1994 distress, a 1994 resource variable, 1997 stressful events, and the interaction
term between 1997 events and 1994 resources. The following equation was computed for each resource variable in 1994 (financial resources, self-concept, friends' social support, and mothers' social support):

\[
\text{Distress}_{1997} = \beta_0 + \beta_1 \text{(Distress}_{1994}) + \beta_2 \text{(Events}_{1997}) + \beta_3 \text{(Resource Variable}_{1994}) \\
+ \beta_4 \text{(Events}_{1997} \times \text{Resource Variable}_{1994}) + \text{Error}
\]

Four regression equations were calculated, yielding one significant buffering effect — financial resources in 1994. Consistent with the direct effect of financial resources at late-adolescence on psychological distress at young adulthood found in analysis of the main effects model, financial resources also appear to buffer the effect of stressful events on distress during this same stage of life ($\beta = -.42$). In the presence of high financial need, the positive relationship between earlier stressors and later distress was significant, but when financial need was low, stressful events do not impact later distress (Figure 8). Thus, for young people entering adulthood, financial resources act as a protective mechanism, buffering the negative impact of stressful life events on mental health.

Figure 8 about here
Discussion

The present study considers stressful life events and symptoms of depression and anxiety as a reciprocal process. Consistent with a life course and social contextual approach, each construct is viewed as a causal influence on the other during the years of middle-adolescence, late-adolescence, and early adulthood. The possible direct and buffering effects of financial, personal, and social resources were also investigated. Study predictions included stability among stressful life events and psychological distress across time. In all models, psychological distress showed stability from middle-adolescence to early adulthood, revealing consistency in targets' mental health, even across this period of change and developmental transition. Stability of stressful events across these years was weaker, perhaps due to changes in the checklist at each data-collection point. Also consistent with study predictions, support was provided for the influence of stressful events on later distress. In all analyses, life events reported over the past year significantly predicted anxiety and depression over the past week. Thus, this study replicates the findings of more limited studies (Cohen et al., 1987; DuBois et al., 1992; Compas et al., 1993; Stallings et al., 1997; Leadbeater, 1999), finding consistent prediction from events to distress among adolescents, and extends the age studied to early adulthood.

Another important study prediction was also supported, albeit less consistently. Following the contextual approach, events and distress are viewed as intersecting forces in adolescents' lives, with stressful events leading to greater distress, and greater distress triggering stressful life events. Consistent with the findings of Kaplan and Damphouse (1997), 1991 psychological distress significantly predicted 1997 stressful events. This six-year path
was the only significant path, however, with the 3-year paths from distress to events not significant. The implications of this finding are discussed next.

The finding that the prediction of stressful life events in early adulthood (1997) was significant from psychological distress in middle-adolescence (1991) to early adulthood (1997), but not significant from 1991 to 1994, nor from 1994 to 1997 is an intriguing one. The correlations between constructs (Table 1) also support this relationship, with stressful events in 1997 more strongly correlated with distress in 1991 (.28), than with distress in 1994 (.17). Additionally, the correlation between 1991 distress with distress in 1994 was not significant (.09). The number of stressful events occurring in 1991 and 1997 were closer to one another than to the count in 1994, but this was not due to content of the life event checklists over the three waves. In fact, the checklist in 1991 was more similar to the 1994 version than to the checklist as it appeared in 1997. This finding suggests a persistent influence of distress on stressful life events. Alternatively, this finding could reflect variation in the nature of events experienced at differing ages.

Given the dearth of research literature examining reciprocity between events and distress among adolescents, little guidance can be gleaned from existing knowledge. The prediction of later events by distal rather than proximal distress could be due to the unique nature of adolescents’ life experiences at these ages. During this time, young people navigate the crucial shift from childhood to adolescence, and from adolescence to adulthood. The targets in 1991 were still residing with their families of origin and were underclassmen in high school. Three years later, these targets were ready to launch from their families, were finishing high school, preparing for further schooling or employment, and were reaching an age at
which adult responsibilities become reality. By 1997, targets were 20 or 21 years of age. By this age, targets were upper-classmen in college, or three years into their chosen field of training or employment. At early adulthood, targets were more likely to have formed families or significant relationships of their own, and most were fully engrossed in the responsibilities of adulthood. 1991 and 1997 were most likely times of greater stability than 1994. Thus, 1994 was a somewhat atypical year for these young people in that they were preparing for new and exciting responsibilities and opportunities. In short, 1994 psychological health may have to do with conditions and changes not taken into consideration here. If this is the case, the relationship observed between 1991 psychological distress and stressful events in 1997 may simply reflect the expected pattern emerging at two data-collection points which were more “normal” in the lives of the targets.

Another explanation for the significance of the six-year paths involves the notion of developmental “set”. Research has suggested that some experiences leave a greater imprint at certain times of life (Elder, 1996; Caspi, 1989; 1990; Kandel et al., 1990; Rutter, 1994), but these mechanisms are not fully understood, especially during the ages studied here. The significance of the six-year path suggests that targets' mental health at middle-adolescence is an important predictor of conditions at early adulthood. This idea of a critical developmental period for important stress-reaction styles is supported by previous research on interactional styles over the life course (Caspi et al., 1987).

We have suggested three possible explanations for the six-year path being the only significant path from distress to later events. 1) The path was due to an artifact of the data, such as the way in which information was collected. 2) The path was due to the unique nature
of the transitional year, 1994. 3) The path reflects characteristics of individuals established earlier in life, and captured in this data at middle-adolescence. Perhaps the most likely account involves a combination of the three explanations outlined here. Replication of this study should examine these relationships in order to better understand the processes at work.

SEM analysis and OLS regression with the resource variables provide some level of support for three of the distress-deterring and coping models. Analysis with all four resource variables provide support for the deterioration model, consistently showing that earlier stressors erode later resources. Analysis with financial resources provides support for the independent and stress-conditioning models. Financial resources at late-adolescence directly impact psychological distress in 1997. Additionally, regression analysis reveals a buffering effect of financial resources at late-adolescence on the relationship between stressful events and psychological distress in early adulthood. Financial resources directly impact later distress, and also protect against the detrimental effects of stressful life events as adolescents transition to independence.

Conclusions

Several conclusions and challenges are derived from the findings of this study. 1) The focus on reciprocal change between events and distress over time advances understanding of the stress process among adolescents and young adults, supporting previous assumptions. The findings of this study support a change from a unidirectional focus in the study of the stress process, to a reciprocal, contextual approach. Additionally, the findings support the importance of consideration of these relationships over time. 2) The six-year effect from middle-adolescence to early adulthood presents new questions and challenges for future
research, and provide further support for a longitudinal approach. We have suggested possible interpretations of these findings. Future study may help to further explain their meaning.

Resource variables including social support of family, social support outside the family, material support, and personal resources all interact with the stress process during the developmental period studied here. This supports the importance of the contextual approach, considering various interrelated aspects of individuals’ lives, and provides more support for the importance of the longitudinal, prospective design.

**Limitations and future research**

Weaknesses of this study include the homogeneity of the sample. Whether these processes operate differently for non-white, non-rural adolescents cannot be determined here. Future research should attempt to replicate the findings of this study with a more diverse sample. Future research should replicate the design of this study, looking for reciprocity between events and distress with prospective data over a number of years. The format of the life event checklist should also be carefully considered. As described in the measures section, the life events checklist across these three waves of data collection cover various domains of targets’ lives, but the items were not identical across waves. There is justification for adjustment of items according to age of respondent. However, in order to conduct extensive examination of change in life events over time, the items must be shared across data-collection points.

The findings of this study generally support the mutual influence hypothesis, but also demonstrate the complexity of individuals’ lives at this crucial transitional stage. The consideration of personal and social resources is important to understanding the processes at
work for adolescents. More investigation is needed to understand external support and personal resources as they impact stressors and distress during the transition from adolescence to adulthood.
Figure 1: The Conceptual Model: Domains of Stability and Mutual Influence
Figure 2: Proposed Distress-deterring and coping models (Ensel & Lin, 1991)
Figure 3: Evaluation of the mutual influence model, standardized regression coefficients, t-values.
Figure 4: Independent, stress-suppressing, and deterioration/counteractive models for financial resources.
Figure 5: Independent, stress-suppressing, and deterioration/counteractive models for targets' mastery and self-esteem.
Figure 6: Independent, stress-suppressing, and deterioration/counteractive models for mothers' social support.
Figure 7: Independent, stress-suppressing, and deterioration/counteractive models for friends' social support.
Figure 8: Stress buffering effects of 1994 Financial Resources
GENERAL CONCLUSIONS

The focus on reciprocal change between events and distress over time advances understanding of the stress process among adolescents and young adults, supporting previous assumptions. This project replicates the findings of more limited studies (Cohen et al., 1987; DuBois et al., 1992; Compas et al., 1993; Stallings et al., 1997; Leadbeater, 1999), finding consistent prediction from events to distress among adolescents, and extends the age studied to early adulthood.

The findings of this study support a change from a unidirectional focus in the study of the stress process, to a reciprocal, contextual approach. This supports the importance of the contextual approach, considering various interrelated aspects of individuals’ lives, and provides more support for the importance of the longitudinal, prospective design. Replication of this study should examine these relationships in order to better understand the processes at work.
APPENDIX A: STRESSFUL LIFE EVENTS

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Pet Died</td>
<td>Pet Died</td>
<td>Pet Died</td>
</tr>
<tr>
<td>A relative died</td>
<td>A relative died</td>
<td>A relative died</td>
</tr>
<tr>
<td>Argued more with B/G Friend</td>
<td>Argued more with Boy/Girl Friend</td>
<td>Conflict with partner/spouse</td>
</tr>
<tr>
<td>Friend</td>
<td>Friend</td>
<td>Broke up with Boy/Girl Friend</td>
</tr>
<tr>
<td>Broke up with Boy/Girl Friend</td>
<td>Broke up with Boy/Girl Friend</td>
<td>Broke up with close friend</td>
</tr>
<tr>
<td>Close friend moved away</td>
<td>Close friend moved away</td>
<td>Failed a class</td>
</tr>
<tr>
<td>Broke up with close friend</td>
<td>Broke up with close friend</td>
<td>Trouble at school</td>
</tr>
<tr>
<td>Failed a class</td>
<td>Trouble at school</td>
<td>Ill or injured</td>
</tr>
<tr>
<td>Trouble at school</td>
<td>Ill or injured</td>
<td>Not accepted into group</td>
</tr>
<tr>
<td>Ill or injured</td>
<td>Girls- preg. /Boys - GF pregnant</td>
<td>Friend moved</td>
</tr>
<tr>
<td>Girls- preg. /Boys - GF pregnant</td>
<td>Began substance use</td>
<td>Fired/laid off</td>
</tr>
<tr>
<td>Began substance use</td>
<td>Not accepted into group</td>
<td>Got into trouble with the law</td>
</tr>
<tr>
<td>Not accepted into group</td>
<td>Fired/laid off</td>
<td>Victim of violent crime</td>
</tr>
<tr>
<td>Fired</td>
<td>Got into trouble with the law</td>
<td>Conflict with family member</td>
</tr>
<tr>
<td>Ran away from home</td>
<td>Victim of violent crime</td>
<td>Quit church</td>
</tr>
<tr>
<td>Got into trouble with the law</td>
<td>Argued more with parents</td>
<td>Friend died</td>
</tr>
<tr>
<td>Victim of violent crime</td>
<td>Quit church</td>
<td>Lost driver's license</td>
</tr>
<tr>
<td>Argued more with parents</td>
<td>Friend died</td>
<td>Robbed</td>
</tr>
<tr>
<td>Quit church</td>
<td>Lost driver's license</td>
<td>Accident</td>
</tr>
<tr>
<td>Friend died</td>
<td>Lawsuit/court case</td>
<td>Disaster/ hazard</td>
</tr>
<tr>
<td>Financial crisis/money problems</td>
<td>Robbed</td>
<td>Lawsuit</td>
</tr>
<tr>
<td>Parents separate/divorce</td>
<td>Accident</td>
<td>Financial crisis/money problems</td>
</tr>
<tr>
<td>Sib in trouble at school</td>
<td>Disaster/hazard</td>
<td>Divorce (self)</td>
</tr>
<tr>
<td>Sib in trouble with law</td>
<td>Financial crisis/money problems</td>
<td>Witness death or injury</td>
</tr>
<tr>
<td>Parents argued more (each other)</td>
<td>Parents separate/divorce</td>
<td>Spouse died</td>
</tr>
<tr>
<td>Mom away from home more</td>
<td>Sib in trouble with law</td>
<td>Extramarital affair</td>
</tr>
<tr>
<td>Friend ill or injured</td>
<td>Parents argued more (each other)</td>
<td>Long separation from loved one</td>
</tr>
<tr>
<td>Friend pregnant</td>
<td>Mom or Dad away from home more</td>
<td>Sexual harassment victim</td>
</tr>
<tr>
<td>Parent ill or injured</td>
<td>Friend ill or injured</td>
<td>Conflict with roommate/friend</td>
</tr>
<tr>
<td>Sib ill or injured</td>
<td>Friend pregnant</td>
<td>Friend ill or injured</td>
</tr>
<tr>
<td>Other rel. ill or injured</td>
<td>Parent ill or injured</td>
<td>Parent ill or injured</td>
</tr>
<tr>
<td>Parent fired/laid off</td>
<td>Relative ill or injured</td>
<td>Sib ill or injured</td>
</tr>
<tr>
<td>Parent in trouble with law</td>
<td>Parent fired/laid off</td>
<td>Relative crisis</td>
</tr>
<tr>
<td>Family victim-violent crime</td>
<td>Parent in trouble with law</td>
<td>Spend time in jail</td>
</tr>
<tr>
<td>Natural disaster/hazard</td>
<td>Family mem. victim-violent crime</td>
<td>Other</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>
1. SCL90-R (Target report)

"During the past week, including today, how much were you distressed or bothered by . . .

1=Not at all, 2=A little bit, 3=A moderate amount, 4=Quite a bit, 5=Extremely

**Depression**
- Feeling low in energy or slowed down.
- Thoughts of ending your life.
- Crying easily.
- Feelings of being trapped or caught.
- Blaming yourself for things.
- Feeling lonely.
- Feeling blue.
- Worrying too much about things.
- Feeling no interest in things.
- Feeling hopeless about the future.
- Feeling everything is an effort.
- Feelings of worthlessness.

**Anxiety**
- Nervousness or shakiness inside.
- Trembling.
- Suddenly scared for no reason.
- Feeling fearful.
- Heart pounding or racing.
- Feeling tense or keyed up.
- Spells of terror or panic.
- Feeling so restless you couldn’t sit still.
- The feeling that something bad is going to happen to you.
- Thoughts and images of a frightening nature.

2. Mastery and Self-esteem (Target report)

"How strongly do you agree or disagree with these statements about yourself?"

1=Strongly disagree, 2=Agree, 3=Neutral or Mixed, 4=Disagree, 5=Strongly disagree

**Mastery**
- There is really no way I can solve some of the problems I have.
- Sometimes I feel that I’m being pushed around in life.
- I have little control over the things that happen to me.
- I can do just about anything I really set my mind to.
- I often feel helpless in dealing with the problems of life.
- What happens to me in the future mostly depends on me.
- There is little I can do to change many of the important things in my life.

**Self-esteem**
- I feel that I’m a person of worth, at least on an equal level with others.
- I feel that I have a number of good qualities.
- All in all, I am inclined to feel that I’m a failure.
- I am able to do things as well as most other people.
- I feel I do not have much to be proud of.
- I take a positive attitude toward myself.
- I certainly feel useless at times.
- I wish I could have more respect for myself.
- At times I think I am no good at all.
3. Financial Resources (Mother report)

“How much do you agree or disagree with each statement about your family’s economic situation?”

1 = Strongly agree, 2 = Agree, 3 = Neutral or Mixed, 4 = Disagree, 5 = Strongly disagree

- My family has enough money to afford the kind of home we should have.
- We have enough money to afford the kind of clothing we should have.
- We have enough money to afford the kind of furniture we should have.
- We have enough money to afford the kind of car we should have.
- We have enough money to afford the kind of food we should have.
- We have enough money to afford the kind of medical care we should have.

4. Social Support (Target report, same items referring to mother or best friend)

“How much do you agree or disagree with the following statements about your best friend/mom?”

1 = Strongly agree, 2 = Agree, 3 = Neutral or Mixed, 4 = Disagree, 5 = Strongly disagree

- I can depend on my best friend/mom to help me if I really need it.
- I feel I could not turn to my best friend/mom for guidance in times of stress.
- My best friend/mom enjoys the same social activities that I do.
- I feel personally responsible for well-being of my best friend/mom.
- I feel my best friend/mom does not respect my skills and abilities.
- If something went wrong, I feel my best friend/mom would not come to my assistance.
- My relationship with my best friend/mom provides me with a sense of emotional security and well-being.
- I feel my competence and skills are recognized by my best friend/mom.
- I feel my best friend/mom does not share my interests and concerns.
- I feel my best friend/mom does not really rely on me for his/her well-being.
- I can turn to my best friend/mom for advice if I am having problems.
- I feel I lack emotional closeness with my best friend/mom.
APPENDIX C: SPECIFICATIONS FOR SEM MODELS

1. LISREL Program for Mutual Influence Model (see Figure 3)

DA NI=15 NO=526 MA=cM
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