



Published in final edited form as:

J Adolesc. 2012 June ; 35(3): 648–658. doi:10.1016/j.adolescence.2011.08.014.

Continuity and Discontinuity of Depression from Late Adolescence to Young Adulthood: The Mediating and Moderating Effects of Young Adults' Socioeconomic Attainment

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Abstract

Using prospective, longitudinal data from 467 youth over a 13-year period (late adolescence and young adulthood), the present study investigates three research questions: (1) to what extent do elevations in depressed mood continue (homotypic continuity) from adolescence to young adulthood, (2) to what extent do young adults' socioeconomic attainments and failures sustain the depressed mood from adolescence to young adulthood and (3) to what extent do young adults' socioeconomic attainments or failures mediate the continuity and discontinuity of depressive symptoms across this period? The results from our structural equation modeling (*SEM*) analyses suggest that continuity of depressive symptoms from late adolescence to young adulthood is mediated in part by economic and work achievements or failures of young adults after controlling for adolescent conduct disorder/antisocial behavior, parents' psychopathology and family adversity. Additionally, the results indicate that the continuity of depressed mood across the early life course is conditioned (stabilized or disrupted) by young adult socioeconomic achievements or failures.

Keywords

Youth Depressed mood; Homotypic Continuity; Socioeconomic Attainment

The relatively high prevalence of youth depression has led to a growing interest in the investigation of the continuity of depression over adolescence and young adulthood (Costello, Mustillo, Erlanki, Keeler, & Angold, 2003; Fergusson & Woodward, 2002; Reinke & Ostrander 2008; Rutter, Kim-Cohen, & Maughan 2006; Rudolph, Flynn, Abaied, Groot, & Thompson, 2009). Most studies have reported significant continuity in depressed

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mood and depressive disorders during adolescence and young adulthood, even after taking into account confounding factors such as comorbidity with other disorders (Costello et al., 2003; Fergusson & Woodward, 2002; Larsson, Larsson, & Lichtenstein, 2004; Wickrama, Conger, Lorenz, & Surjadi, 2009). Previous research has also shown that depression is a risk factor for other long-term psychiatric outcomes including antisocial personality and alcohol dependence (heterotypic continuity) (Reinke & Ostrander 2008; Woster, Harrington, & Rutter, 2001). Heterotypic continuity of depression is an important issue in the development of youth psychopathology. Previous studies have suggested that a variety of mechanisms underlie heterotypic and homotypic continuity. Given the extensiveness of this investigation, we limit the scope of present study to examine the continuity of depressed mood (homotypic continuity).

Previous studies have suggested that a variety of mechanisms may underlie continuity in depressed mood and other disorders such as genetic liability, personal characteristics including negative attribution style and environmental factors such as early and concurrent adverse life experiences (Abramson et al., 2002; Bishop & Norbury, 2004; Eley & Stevenson, 1999; Hammen, 2003; Kendler, Thornton, & Gardner, 2000; Weissman et al., 2006). However, previous research has not specifically investigated whether the socioeconomic success or failure of youth during their transition to adulthood contributes to the continuity of depressive symptoms across adolescence and young adulthood.

Developing the capacity to support oneself through educational attainment and the acquisition of work skills is a central task in young adult development. A long history of social epidemiological research has shown that socioeconomic failure is associated with emotional distress and discouragement. Thus, it seems reasonable that the failure to achieve a degree of socioeconomic success during the early adult years might intensify depressed mood.

The paucity of research related to this issue may be attributed to the lack of data required for proper analyses. For example, many studies of young adults include (a) a limited time-span which may not cover youth transitions to young adulthood; (b) a lack of detailed prospective data on youth depression, socioeconomic attainment, and early life adversities; and (c) limitations in the nature of the study sample (e.g., a clinical sample which can provide little information on youth transitions in the general population). To help address these limitations, the present study used prospective socioeconomic and depressive symptom data gathered during a 13-year period (19 years of age in 1995 to 31 years in 2007) from a community sample of 467 youth and their parents. The goal of this study was to investigate how young adult socioeconomic attainment contributes to the continuity of depressed mood over adolescence and young adulthood. We investigated both the mediating and stabilizing (or destabilizing/disrupting) roles of different aspects of young adult socioeconomic attainment.

Young Adults' Socioeconomic Attainment as a Mediator

We propose that young adult socioeconomic attainment will mediate the relationship between early and later depressed mood. Depressed youth may have difficulties developing knowledge, psychological/cognitive capabilities, and skills necessary for typical levels of educational and occupational attainment (Fergusson & Woodward, 2002; Lewinsohn, Rhode, Seeley, Klein, & Gotlib, 2003). Moreover, depressed youth may have low levels of educational and socioeconomic expectations. In addition, depressed individuals receive less social and family support than non-depressed persons, which are resources that can aid individual success (Miech, Caspi, Moffitt, Wright, & Silva, 1999; Needham, 2009). Also, depressed individuals behave in ways that elicit social rejection and provoke avoidance

behaviors from others (Rudolph et al., 2009). These responses may contribute to stressful work relationships, work instability, and less educational success. Failures in educational, economic and work domains may produce chronically stressful life experiences that can perpetuate continuing depressed mood. This view is consistent with the notion of a 'kindling effect' which suggests that consequences of depression increase the likelihood of later recurrences (Monroe & Harkness, 2005; Rudolph et al., 2009).

However, recent studies also suggest that genetic liability influences both life experiences and mental health across the early life course (Rutter et al., 2006). This influence, at least partly, creates the possibility of a genetic overlap between youths' negative life experiences and depressed mood; this is also referred to as a gene-environment correlation (Rice, Harold, & Thapar, 2003; Rutter et al., 2006). Furthermore, comorbidity between depression and antisocial behavior during adolescence is well documented (Angold et al., 1999; Beyers & Loeber, 2003; Fergusson & Woodward, 2002; Ritakallio et al., 2008; Rowe et al., 2006; see Wolff & Ollendick for a review). For instance, Angold et al. (1999) found that conduct disorder was about seven times more common among depressed adolescents than among those who were not depressed in their meta-analysis of community studies. Therefore, the model utilized in the present study controls for adolescent conduct disorder and antisocial behavior, as well as heritability factors such as parents' mental health to minimize the effect of a genetic overlap.

Young Adults' Socioeconomic Circumstances as a Stabilizer

We also propose that the continuity of depressed mood across the early life course is conditioned (stabilized or destabilized) by young adult socioeconomic achievements or failures. This conditioning may be attributed to the fact that stable socioeconomic contexts suppress or break down potential mechanisms responsible for the continuity of depressed mood (e.g., depressogenic cognitive attributional biases; Abramson et al., 2002; Rudolph et al., 2009). For example, we argue that under stable positive socioeconomic contexts (e.g., stability in work), youth are less likely to develop cognitive biases resulting in chronic stressful relationships that may mediate the association between earlier and later depression. Also, the perceived salience of negative events and the detrimental consequences of stressful experiences may be reduced under stable and more advantaged socioeconomic contexts (Beiser & Wickrama, 2004). Alternatively, young adults' stressful socioeconomic failures may sustain the relationship between early and later depression by increasing young adults' vulnerability to stressful experiences. Moreover, research suggests that life experiences and genetic factors interact with each other when influencing depressive symptoms (Caspi et al., 2003).

A change in socioeconomic contexts may be an orderly process (e.g., beginning a career after completing education) or a discrete major life event (e.g., a high school drop-out joining the military). The latter case is consistent with the notion of a 'turning point' which suggests that adverse depressive symptom trajectories may discontinue or turn when life circumstances change favorably (Wheaton, Blair, & Gotlib, 1997). The following analyses examine the degree to which the socioeconomic successes or failures of young adults contribute to continuity and discontinuity in depressed mood during the early adult years.

Method

Sample and Procedures

The data used in these analyses come from the Family Transitions Project (FTP). This study combines participants from two earlier research projects: the Iowa Youth and Families Project (IYFP) and the Iowa Single Parent Project (ISPP). The IYFP began in 1989 and

involved 451 families in eight counties in Iowa. The site for the research was determined by our interest in rural economic stress and well-being. Families were eligible to participate in the IYFP if the target adolescent (Grade 7, median age of 12.7 years) lived with two biological parents and a sibling within four years of the target's age. Family size ranged from 4 to 13 members, larger than average in the general population. Approximately seventy-eight percent of the families who met the criteria for inclusion in the study agreed to participate. Couples in the sample had been married for at least 14 years. At the first wave of data collection in 1989, 97 percent of the husbands and 78 percent of the wives were employed. About ninety-seven percent of the employed husbands and 50 percent of the employed wives were full-time workers. The median yearly income in 1989 was \$22,000 for men and \$10,000 for women. The median age for the men and their wives was 39 and 37 years, respectively. The median number of years of education for both spouses was 13. Because of the rural location of the study in the upper Midwest, all families in the sample were white.

Trained field interviewers visited the participants in their homes on two occasions each year during adolescence and every other year after adolescence. The visits typically occurred within a one or two-week period. During the first visit, a professional interviewer asked each family member to fill out a detailed questionnaire about family life and work, finances, friends, and mental and physical health status. Information gathered during the first visit of each year provided the data for the present analyses.

The ISPP was initiated two years after the IYFP in 1991 and used the same procedures and measures as the IYFP. The households were selected because they had adolescents who were in the same grades as those in the IYFP and located in the same geographic location. Data came from 107 mother-only families with adolescents concurrently in the same grade (Grade 9) as the IYFP targets. Requirements for mother-only families included: mothers were permanently separated from their husbands, the separation happened in the past 2 years, and the ex-husband was the biological father of the target adolescent. Beginning in 1994, the IYFP and ISPP samples were combined to create the Family Transitions Project (FTP). Preliminary analyses of the initial wave of matched data for the two samples showed that they were similar on important socioeconomic characteristics. The two groups were nearly identical in educational attainment of mothers, and they were approximately the same age (38 years). The distribution of pre-divorce incomes for divorced families was very similar to that for the married families. However, divorced mothers have experienced higher levels of negative life events and depressive symptoms, a lower level of social support and have shown higher levels of ineffective parental practices than did married mothers.

The combined sample of families provided data for the present study. The theoretical model was tested with a total sample 467 individuals from the Family Transitions Project, consisting of 375 youth from two-parent families (IYFP) and 92 adolescents from single-parent families (ISPP). Although only 445 participants provided complete information for all of the study variables, data from 467 participants (some with missing values) were used for the analysis. The mediating model was estimated using the Full Information Maximum Likelihood (FIML) methods available in the AMOS software package (Arbuckle & Wothke, 1999). FIML methods base parameter estimates on all available information thereby allowing cases with missing data into the analysis (Enders, 2001). FIML also provides more consistent, less biased estimates than ad hoc procedures for dealing with missing data such as listwise deletion, pairwise deletion, or imputation of means (Arbuckle, 1996; Schafer, 1997). An attrition analysis was performed to examine possible differences in demographic characteristics between participants who dropped out of the study and the analyzed sample. The analysis revealed only one significant difference: the mean level of parental education was slightly lower for youth who dropped out than youth who remained in the sample.

Taken together, this panel provides a wealth of prospective data on parents and the development of youth from late adolescence through the young adult years. The data include intensive assessments over a 13 year period of family characteristics, psychological problems of parents and children, and socioeconomic attainment of the children—the last is rarely found in large, nationally representative datasets.

Measures

Depressed mood—Depressive symptoms at ages 19 and 31 years were assessed with the 13-item depressive symptoms subscale on the Symptom Checklist (SCL-90-R; Derogatis & Melisaratos, 1983). Respondents used a 5-point scale ranging from 1 (not at all) to 5 (extremely) to indicate how often during the past week they experienced symptoms of depressed mood such as crying easily, feeling trapped or caught, blaming themselves for things, feeling lonely, feeling blue, feeling worthless and feeling hopeless about the future. Scores on the depressive symptoms subscale could potentially range from 1 to 65. Internal consistencies (Cronbach's alpha) exceeded .90 for all waves of data collection.

The SCL90-R depressive symptom checklist has been widely used in mental health research and has been validated in several languages (Holi, Sammallahti, & Aalberg, 2007; Olsen, Mortensen, & Bech, 2004). Consistent with previous research by Aben, Verhey, Lousberg, Lodder & Honig (2002), 'presence of depressive symptoms' or 'depressed mood' was defined with a 25 cut-off point of the SCL90-R depressive symptoms scale. Aben et al., (2002) showed that the 25 cut-off point was optimal with a sensitivity of 88.5 and a specificity of 60.7 when compared with the depression section of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (SCID). Strik, Honig, Lousberg, & Denollet (2001) showed that the cut-off point of 25 has a sensitivity of 95.5 and a specificity of 74.0 for major depression.

Conduct disorder and antisocial behavior—In 1995 lifetime psychiatric disorder was assessed using the University of Michigan Composite International Diagnostic Interview (UM-CIDI). The UM-CIDI is a structured diagnostic interview which assesses DSM-III-R criteria and was designed to be used by trained interviewers, rather than clinicians (Kessler et al., 1993; WHO, 1990). We used lifetime prevalence of any behavior disorder, a dichotomous variable indicating whether targets had met the criteria for conduct disorder, adult antisocial behavior or both disorders, to control for antisocial behavior in our analyses.

Young adult socioeconomic attainment—Several aspects of young adult socioeconomic attainment were measured at 25 years of age (2001).

Educational attainment—Educational attainment was measured with an ordinal scale (0=less than high school, 1=high school/GDE completed, 2=more than high school and less than bachelor degree, and 3= bachelor degree or more). Educational attainment groups were created by splitting the sample into low (less than or only high school) and high (more than high school) groups.

Work Stability—Three dichotomous measures of work stability were summed to create an ordinal scale: full time work, good work security, and no work disruption during the previous year (1=yes, 0=no). In order to test our moderational hypothesis, work stability groups were created by splitting the sample into low (0 on the ordinal scale) and high (greater than 0) groups.

Work Quality—Work quality was measured by summing three items that were rated using a 5-point Likert scale (1=strongly agree, 5=strongly disagree). These items included

statements such as “My job matches what I like to do,” “I have skills from training or experience that I would like to use, but can’t in this job,” (reverse coded), and “I feel relaxed and confident in my work.” These items were derived from Karasek & Theorell (1990), capture the control dimensions of work, and have an internal consistency of .63. In order to test our moderational hypothesis, low and high work stability groups were created by splitting the sample at the mean value.

Economic Stability—Economic stability was measured by two indices: Lack of negative economic events (NEE) and lack of financial cutback. The NEE measure was created by summing target’s responses to each of 28 items indicating negative economic events they experienced (1=yes, 0=no). The list of negative economic events included items such as “take a cut in wage or salary,” “suffer a financial loss in business,” “move to worse residence,” “have a home loan foreclosed on,” and “start receiving government assistance.” Economic stability groups were created by splitting the sample into low (no events occurred) and high (1 or more events occurred) groups.

Cutbacks—In 2001 targets reported whether they had experienced any of 29 economic cutbacks (1=yes, 0=no), such as “take an extra job to help meet expenses,” “dropped plan for going to college,” “reduced driving a car,” “reduced household utility use,” “postponed medical/dental care,” and “borrowed money to help pay bills.” The sample was then split into two groups, those who had experienced any cutbacks (cutbacks >0) and those who had not (cutbacks=0).

Parent Psychopathology—Mothers’ and fathers’ psychopathology were assessed in 1991 using the 13-item depressive symptoms subscale of the Symptom Checklist (SCL-90-R; Derogatis & Melisaratos, 1983). The Cronbach’s alpha for depression in 1991 was .91 for husbands and .91 for wives.

Family Economic Hardship—A measure of economic problems was adapted from Dohrenwend, Krasnoff, Askenasy, & Dohrenwend (1978). The measure of family economic hardship was created by summing the mothers’ and fathers’ “yes” responses to each of 51 items in 1991 that indicate economic problems experienced by the family (1=yes, 0=no). The list of economic problems included items such as “start receiving government assistance such as AFDC, FIP, TANF, SSI, food stamps, or something else,” “go deeply into debt for a mortgage loan or other reasons,” “sell property because of financial difficulties,” “have a home loan or any other loan foreclosed,” “move to worse residence or neighborhood,” “change jobs for a worse one,” “get demoted, have trouble at work,” “get fired,” “get laid off,” “take a wage cut,” and “other financial problems.”

Analysis Plan

The continuity of depressed mood across young adulthood was examined by computing the percentage of young adults of the total sample who experienced depressed mood in 1995 and 2007 (i.e., the rate of homotypic continuity). To examine the stabilizing role of young adult socioeconomic achievement, rates of homotypic continuity for the low and high achievement groups described above were computed. In addition, odds-ratios for having repeated depressed mood in 1995 and 2007 for low achievement groups compared to high achievement groups were computed. The differences in these proportions between low and high groups were tested using a Z-test. We used a structural equation modeling (*SEM*) framework to examine the mediational role of young adult socioeconomic attainments in continuity of depressed mood across late adolescence and young adulthood. For these analyses measures of economic stability, work stability, education, and work quality were included as intervening variables in the relationship between depressive symptoms in 1995

and 2007. This model controlled for adolescent conduct disorder and antisocial behavior, family structure, mothers' and fathers' psychopathology and family economic difficulties.

Results

Table 1 presents descriptive statistics of study variables. The mean number of depressive symptoms was 18.6 in 1995 and 17.2 in 2007. The prevalence rates of depressed mood --the percentages of cases out of the total sample who scored 25 or more on the SCL depressive symptom measure were 13.7% in 1995 and 10.6% in 2007. Compared to males, females showed consistently higher rates of depressed mood and continuity of depressed mood from 1995 to 2007. The percentage of young adults out of the total sample who experienced depressed mood both in 1995 and 2007 (homotypic continuity) was 3.3. Young adults with a history of depressed mood in 1995 were 3 times more likely than those without to have depressed mood in 2007.

Table 2 shows the results of moderation tests for the homotypic continuity of depressed mood from 1995 to 2007 by the level of young adults' socioeconomic attainment measures with the prevalence rates in parentheses. For each of the socioeconomic attainment measures, with the exception of work quality, the high group had significantly lower rates of depressed mood than did the low group. For instance, the low work-stability group had prevalence rates of depressed mood of 17.91% in 1995 and 18.96% in 2007, whereas the high work-stability group prevalence rates were 12.1% in 1995 and 7.6% in 2007. Likewise, the rates of homotypic continuity from 1995 to 2007 (i.e., the percentage of cases out of the total sample who experienced depressed mood both in 1995 and 2007) were significantly lower for the higher socioeconomic groups compared to the lower socioeconomic groups for all socioeconomic attainment measures. For instance, the high work stability group showed significantly lower homotypic continuity of depressed mood than did the low work stability group (2.1% versus 6.6%, respectively). Taken together, the results in Table 2 illustrate that the low achievement groups showed significantly higher prevalence rates of depressed mood in 1995 and 2007, and higher rates of homotypic continuity in depressed mood than did the high achievement groups.

Examination of the odds ratios for homotypic continuity in depressed mood (defined with a cut-point of 25 in SCL90-R depressive symptoms scale) for each aspect of socioeconomic attainment reveal a similar pattern (presented in the last column of the Table 2). The likelihood of homotypic continuity in depressed mood is significantly greater for those in the lower attainment groups than those in the higher attainment groups across all of the socioeconomic achievement groups. For instance, the likelihood of homotypic continuity for youths who reported high work stability compared to youths who reported low work stability was 3.14, representing a 314% increase in the likelihood of having depressed mood both in 1995 and 2007. The odds ratios for higher attainment groups compared to lower attainment groups in relation to no cutbacks, no economic negative events, work quality, educational attainment, and overall socioeconomic attainment were all significant. The results in Table 2 also indicate, consistent with previous research, that females have a significantly higher rate of the continuity of depressed mood (6.0%) than do males (1.0%) over the 13-year period. Gender differences in stabilizing role of socioeconomic attainment variables could not be tested due to small cell sizes.

The results of the *SEM* mediational model are provided in Figure 1. The model tests the influence of depressive symptoms in 1995 on depressive symptoms in 2007 directly and indirectly through socioeconomic attainment variables after controlling for adolescent conduct disorder and antisocial behavior. The results showed that the level of depressive symptoms in 1995 was associated with subsequent achievements in economic stability (–.

24, $p < .05$), work stability ($-.14$, $p < .05$), and work quality ($-.13$, $p < .05$) in 2001 which, in turn, were significantly associated with the level of depressive symptoms in 2007. The inclusion of these mediating variables in the model decreased the direct association between early and later depressive symptoms by nearly 50% (from $b = .30$ to $.16$; the difference was statistically significant, $p < .05$) and increased the explained variance increase from .09% to 24%. These results provided evidence for partial mediation of early to later depressive symptoms by young adults' economic and work attainments/failures. Although young adult education (more than high school) had destabilized (disrupted) the continuity of depressed mood (Table 2), education was not associated with either early or later depressive symptoms in the mediational model depicted in Figure 1.

In our analyses all the mediators (error terms) were allowed to correlate with one another. Two of these correlations were significant—work stability was significantly correlated with economic stability (.32) and work quality (.24)—and the remaining four correlations were non-significant. Taken together this suggests that the socioeconomic achievement variables demonstrated adequate independence. As mentioned previously, the model controlled for adolescent conduct disorder and antisocial behavior, mothers' and fathers' depressive symptom levels and family economic problems in 1991, as well as for youth gender. As shown in Figure 1, adolescent conduct disorder and antisocial behavior was significantly correlated with depressive symptoms in 1995 and significantly influenced young adult economic stability and education. This *SEM* mediational model demonstrated an acceptable fit with the data ($\text{Chi-square} = 71.532$, $df = 30$, $\text{Chi-square}/df = 2.38$, $\text{CFI} = .93$, and $\text{RMSEA} = .04$).

Three significant gender differences in direct and mediating paths were found when the model was tested separately for females and males. Consistent with previous research, although the direct association between depressive symptoms (1995) and depressive symptoms in 2007 was significant for both males and females, it was significantly lower for males (.11, $p > .05$) than for females (.18, $p < .05$). Work stability significantly mediated the association between depressive symptoms in 1995 and depressive symptom in 2007, but only for females. Conversely, the influence of education attainment on depressive symptoms in 2007 was significant only for males ($-.17$) and not for females ($-.02$).

An alternative mediational model which used all the socioeconomic mediators as multiple indicators of a latent construct of overall socioeconomic achievement was also tested. The results from this model (not displayed) were consistent with the previous results: this socioeconomic achievement construct also showed significant associations with early depressive symptoms ($-.24$, $p < .05$) and later depressive symptoms ($-.38$, $p < .05$) after controlling for conduct disorder/antisocial behavior, family structure, parents' depressive symptoms, family economic problems, and gender. The direct association between depressive symptoms (1995) and depressive symptoms (2007) was reduced from .30 to .19 ($p < .05$, one-tail test) with the addition of the socioeconomic latent variable. Further evidence of mediation was indicated by the significant indirect association between depressive symptoms (1995) and depressive symptoms (2007) via the socioeconomic achievement construct.

Discussion

The results of this study show that the mean level of depressive symptoms and prevalence rate of depressed mood declines from late adolescence through young adulthood. This decline in depressive symptoms is consistent with the previous research. Researchers have noted that emotional and behavioral difficulties tend to increase during adolescence but then decline in the early adult years (e.g., Wickrama et al., 2008) likely due to the diminishing

influence of the stressful circumstances experienced during adolescent years. For example, during adolescent years, youth experience significant biological changes, increasing expectations for independence and changes in social arrangements (Ge et al., 1994; Larson et al., 2002). Decline in depressive symptoms may also be due to an increased capacity for emotional regulation during adulthood (Larson, 2002).

However, the results showed that for a substantial portion of youth, depressed mood continues homotypically across young adulthood. Young adults with a history of depressed mood in late adolescence were 3 times more likely than those without to have a depressed mood in adulthood. The results of the socioeconomic attainment group comparisons suggest that young adult work and economic and educational attainments disrupt the continuity of depressed mood over young adulthood. The likelihood of continuity in depressed mood is more than 100% for low attainment groups compared to high attainment groups (i.e., odds-ratios were greater than 2.0 for all aspects of socioeconomic attainments). This conditioning may be attributed to several mechanisms associated with the achieved stable socioeconomic contexts. First, stable socioeconomic contexts such as youth economic and work stability, and personal resources such as education suppress depressogenic cognitive attributional biases (Abramson et al., 2002; Rudolph et al., 2009) responsible for the continuity of depressed mood. Particularly, education attainment may diminish such cognitive biases and disrupt the continuity of depressive symptoms (although it did not mediate the continuity of depressed mood across young adulthood). Second, psychiatrists contend that stable socioeconomic contexts can aid in “time splitting,” the suppression of past experiences and dissociation of the past from the present and future (Beiser & Hyman, 1997). Thus, “time splitting” may help to break down the continuity of mental health problems. Stability in work is a particularly salient protective factor because it helps individuals to suppress stressful past (Beiser & Wickrama, 2004).

Consistent with the previous research that has documented consistently higher rates of internalizing symptoms for females than for males (Ge, Conger, & Elder, 2001; Piccinelli & Wilkinson, 2000), the results demonstrated that homotypic continuity of depressed mood and depressive symptoms was significantly higher for females than for males. Additionally, two other significant gender differences were found: work stability mediated the association between depressive symptoms in 1995 and 2007, but only for females, and greater educational attainment in 2001 predicted fewer depressive symptoms for males, but not for females. Male’s economic returns for every educational level are greater than are females’. For instance, the average earnings for males with a bachelor degree in 2008 were \$72, 868 compared to \$44,078 for females with the same degree, and this pattern of greater earnings for males than for females holds across all education levels (U. S. Census Bureau, 2011). Perhaps for males educational attainment is enough to alleviate feelings of worry and stress related to economic stability, whereas women do not feel confident until they have actually obtained stable work. Although it is unclear why these gender differences in mediation arose, these results suggest that different aspects of socioeconomic achievement may be more effective in mediating the continuity in depressive symptoms for males and females. Additional research is needed to determine whether these findings replicate across other samples and whether the effects of other types of socioeconomic achievement on depressive symptoms also differ by gender.

It is important to note that the baseline rates of depressed mood (1995) were higher for the low achievement groups than for the high achievement groups. Thus, it appears that low achievement groups included youth who were already at-risk. Previous research suggests that the variation in baseline rates of depressed mood may be attributed to early adolescent stressful experiences such as family stressful circumstances and ineffective parental practices (Wickrama et al., 2008). However, the percentage based proportions and odds

ratios showed that low socioeconomic achievement groups have also experienced higher rates of homotypic continuity of depressed mood over time regardless of baseline rates of depressed mood.

The results from our *SEM* analyses also provided evidence for the continuity of depressive symptoms even after taking into account comorbid mental health problems such as adolescent conduct disorder and antisocial behavior. The results of our *SEM* analyses suggest that the continuity of depressive symptoms in young adulthood was partly mediated through the economic and work stability, and work quality young adults achieved during their transition to adulthood. Depressed youth may not develop the psychosocial competencies, cognitive capabilities, and skills necessary for socioeconomic attainment, and thus are more likely to experience unstable and low quality employment, negative life events, and economic problems. In turn, this failure to achieve socioeconomic success is stressful. These stressful life experiences may contribute to the continuity of depressive symptoms through several mechanisms (Angst, 2002; Fergusson & Woodward, 2002; Lewinsohn et al., 2003, Pearlin, 1989). Stress researchers contend that depression is one of the most obvious reflections of stress (Pearlin, Schieman, Fazio, & Meersman, 2005). Stressful experiences increase the sense of entrapment, feelings of anger, hopelessness, frustration, and other negative emotions of youth (Ge et al., 1994). In addition, stressful experiences also erode psychological resources such as self-esteem. This association may be attributed to several psycho-social mechanisms including reflected appraisal, social comparisons, and self-evaluation (Rosenberg, 1979). Eroded psychological resources increase the vulnerability of youth and foster depressive symptoms (Whisman & Kwon, 1993). Conversely, high quality and stable work engenders satisfying and happy feelings and enhances psychological resources, thus decreasing vulnerability (Wickrama et al., 1997). Despite these reasons to believe that young adults' socioeconomic attainment/failure may be a potential mechanism for continuity of depressive symptoms across young adulthood, previous research had not specifically examined this possibility until this study .

As noted earlier, there is much research that finds a comorbid relationship between depression and antisocial behavior. Several longitudinal studies even suggest that antisocial behavior precedes depression (Capaldi, 1992; Feehan, McGee, & Williams, 1993; Fergusson et al., 2003; Kiesner, 2002). Yet, in our *SEM* analyses the path from antisocial behavior to later depressive symptoms was non-significant. Previous research suggests that a history of antisocial behavior is associated with later financial and work problems (e.g., Moffitt et al, 2002). Indeed, the paths in our *SEM* model from antisocial behavior to later educational attainment and economic stability were both significant. Thus, earlier antisocial behavior appears to result in less economic stability, which in turn predict later depression. This suggests that the same processes that partially mediated the continuity in depression (homotypic continuity) may also work to mediate heterotypic continuity; in this case the relationship between antisocial behavior and later depression. Future research should more fully investigate these relationships and the possibility of these socioeconomic variables being important mediators for heterotypic continuity, in addition to homotypic continuity.

We expected that different aspects of socioeconomic attainment would operate as both mediators and stabilizers (or destabilizers) of the continuity of depressive symptoms over time. These stabilizers (or destabilizers) can be viewed as resiliency factors, environmental contexts (e.g., work stability) or personal resources (e.g., education) that help with coping with depressive symptoms while mediators link prior and post depressive symptoms. Thus, under low and high levels of stabilizer-conditions, the degree of continuity of depressive symptoms may be different. Stabilizers are not necessarily associated with prior and post depressive symptoms (e.g., educational attainment in the present study).

The results of this study are consistent with both social causation and social selection traditions. Consistent with the social *selection* perspective, poor mental health *selects* young adults into adverse life circumstances (Conger & Donnellan, 2007; Wickrama et al. 2004). Yet, these adverse life circumstances also contribute to poor mental health, consistent with the social *causation* perspective. The results of this study suggest that both social selection and causation are at work; depressed mood contributes to later failures to achieve socioeconomically, and adverse socioeconomic situations contribute to later depressed mood. Thus, depressed youth may be trapped in a continuing cycle of adverse life circumstances and poor health across the life course involving both social causation and social selection processes. The period of the lifespan under investigation is also important in discussions of social selection and social causation. For instance, achieving socioeconomic independence and success are key developmental tasks during the period of late adolescence and early young adulthood. Thus, in the present study we focused on social selection during the late adolescent-early young adulthood years and social causation (i.e., economic achievements effect on later depressed mood) in subsequent young adulthood. While we do not deny that the reverse could also be true during this period, we attempt to mitigate the possibility of this reverse hypotheses by allowing 6-year intervals between measurements (1995, 2001, and 2007).

Although the findings from the present study are generally consistent with our hypotheses, the study is not without limitations. First, it is important to evaluate models using diverse families in terms of their structure, ethnicity, and nationality. Although there is variation in family structure in our sample, future research should include single-child families and families whose residence is not rural (e.g., suburban and urban families). Our sample also consisted entirely of European American. Future research should replicate these findings with more ethnically diverse samples. Second, future replication should involve alternative measures of young adult socioeconomic attainment including more objective measures (e.g., tax returns) as well as encompassing more social achievements, particularly close and romantic relationships. Use of objective measures will reduce potential self-report biases. Third, the depression measure used in the present study only assesses symptoms present during the past week while the measures of socioeconomic attainment generally assessed youth experiences over the past year. Use of measures which assess experiences during the same time period will provide more convincing results. Fourth, although we have attempted to create meaningful 'low' and 'high' socioeconomic attainment groups with adequate sizes, the use of different cut-points and the groups generated could produce different results.

We introduced several controls to our mediational model to mitigate the possibility of spurious results. For instance, the mediational model included family structure and early family economic difficulties in order to control for the possibility of early family adversity increasing vulnerability to later depression through its detrimental influence on neurobiological functioning (Boyce & Ellis, 2005; Grossman et al., 2003). However, while the mediational model controlled for mothers' and fathers' psychopathology, the degree of susceptibility to socioeconomic failures may have a heritable component (e.g. genetic susceptibility; Caspi et al., 2003) which may have influenced the results of this study. Furthermore, depression can have comorbidity with other disorders such as anxiety; which may have influenced the study results (Keenan, Feng, Hipwell, & Klostermann, 2009; Pine, Cohen, Gurley, Brooke, & Ma, 1998). The present study focused only on homotypic continuity of depressed mood, however, heterotypic continuity of depressed mood is also an important issue in the development of youth psychopathology. Depressed mood is an important risk factor for other long-term psychiatric outcomes and may lead to other psychiatric disorders such as anti-social personality and alcohol dependence (Reinke & Ostrander 2008; Woster, Harrington, & Rutter, 2001). Future research should focus on various developmental paths of youth psychopathology.

Despite the limitations, the findings from this study have several theoretical and practical implications. The findings showed that depressed youth are at-risk and should be targeted early for intervention programs. These findings also emphasize the need for programs that promote characteristics that protect adolescent from early mental health risks. Several recent intervention and prevention programs such as Coalitions (Spoth et al., 2004) have shown a certain degree of success in reducing the early mental health risk of adolescents and illustrate the importance of involving not only families but also schools and communities in this effort. More importantly, this study demonstrated that young adults' socioeconomic attainment and failures both mediate and moderate the continuity of the early and later depressive symptoms and depressed mood. The study findings suggest that improved understanding of mediating and conditioning processes responsible for the continuity of mental health problems may lead to more effective interventions and medical treatments. These findings emphasize the need for federal, state, and local level policies and programs designed to prevent young adult' socioeconomic failures including truncation of education, instability of employments, and economic problems.

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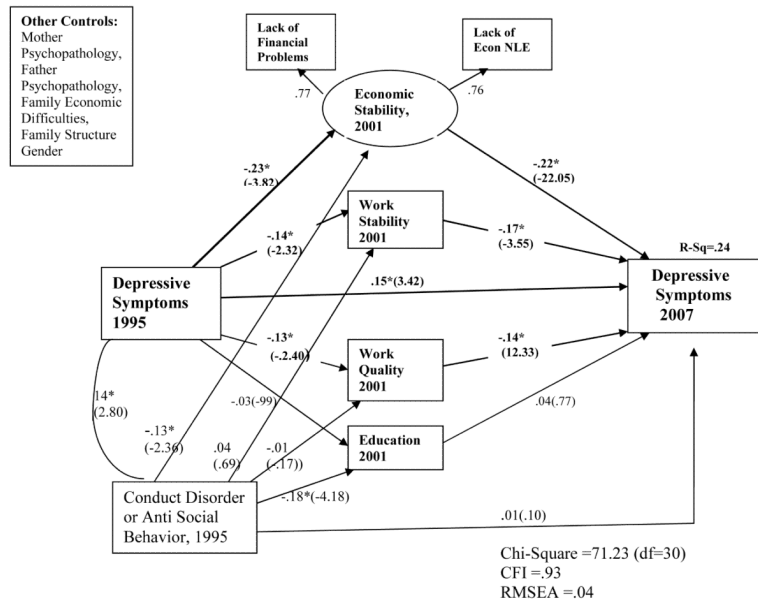


Figure 1. The Mediational Effect of Socioeconomic Attainment on the Continuity of Depressive Symptoms in Young Adulthood

Note: The model controlled for Mother psychopathology (MPsy), Father psychopathology (FPsy), family structure and family economic difficulties (FamEcon) and Gender. MPsy significantly influenced Education (–.10). FamEcon significantly influenced Education (–.13). Family structure (single parent) was significantly correlated with FamEcon (.16), MPsy (.14), and adolescent conduct disorder/antisocial behavior (.11). Gender (Female) significantly influenced Education (.16). All the other paths were not significant. Gender was significantly correlated with conduct disorder/Antisocial behavior (–.25), depressive symptoms in 1995 (.61) and influenced depressive symptoms in 2007 (.14). MPsy and FPsy were correlated each other (.12) and with FamEcon (.17, .16, respectively).

Table 1

Descriptive Statistics of Study Variables

Variable	Min	Max	Mean	Std. Dev	Skewness
Depressive Symptoms 1995	12.00	46.00	18.59	7.09	1.94
Depressive Symptoms, 2007	12.00	55.00	17.16	8.20	2.37
Youth Financial Cutbacks	6.00	45.00	16.40	7.05	.87
Youth Economic NLE	.00	13.00	1.19	1.70	2.18
Youth Work Quality	4.00	15.00	10.87	2.35	1.24
Youth Education	.00	2.00	1.00	.57	.000
Youth Work Stability	.00	2.00	1.80	.43	-1.98
Conduct Disorder/ Anti social Behavior	.00	1.00	.18	.39	1.63
Family Economic Difficulties	.00	16.00	4.82	3.95	.35
Father Psychopathology	13.00	50.96	16.64	5.07	2.87
Mother Psychopathology	13.00	59.02	19.24	7.02	1.87

Table 2
Mean Depressive Symptoms, Prevalence Rates of Depressed Mood, and Homotypic Dis/Continuity of Depressed Mood (DM) from Late Adolescence to Young Adulthood from 1995(19 yrs) to 2007 (31 yrs): The Stabilizing Role of Young Adult Socioeconomic Attainment

Young Adult Socioeconomic Attainment (2001)	Mean Depressive Symptoms 1995 (DM rate)	Mean Depressive Symptoms 2007 (DM rate)	Homotypic Continuity in Depressed Mood (1995-2007)	Odds Ratio for homotypic continuity (CI) (low v. high achievement group)
Total Sample	18.19(13.7%)	17.18(10.6%)	3.3%	---
Work Stability				
Low (167)	19.60(17.91%)	19.20(18.9%) *	6.6% *	3.14 *
High (264)	18.02(12.1%)	16.30(7.64%)	2.1 %	(1.10, 10.16)
Economic Cutbacks				
Cutbacks Experienced (239)	19.21(15.7%)	18.10(13.9%) *	4.7% *	4.70 *
Not Experienced (192)	16.91(9.11%)	15.20(3.3%)	1.0%	(1.00,10.20)
Economic Negative Events(ENLE)				
Events Occurred (234)	19.34(15.5%)	18.51(15.0%) *	4.3% *	2.05 *
Not occurred (197)	17.54(11.7%)	15.76(5.9%)	2.1%	(.63,6.90)
Work Quality				
Low (218)	19.02(16.5%)	18.01(13.8%)	3.9% *	2.05 *
High (168)	17.33(9.2%)	15.49(5.4%)	1.9%	(.53,7.79)
Education				
High School (122)	18.64 (20.0%)	16.86(15.4%) *	6.2% *	2.30 *
> High School (244)	18.57(12.4%)	17.23(9.7%)	2.7%	(.70,7.87)
Overall Socioeconomic Attainment				
Low (178)	19.19(15.9%)	18.45(15.2%) *	5.1% *	2.83 *
High (208)	17.50(11.1%)	15.60(5.8%)	1.8%	(.84,10.14)
Gender				
Female (217)	20.07(17.1%)	18.48(15.2%) *	6.0% *	6.00 *
Male (174)	16.92(9.6%)	15.57(5.1%)	1.0%	(1.20,11.00)

Note.

* Statistically significant difference between for “low” and “high” groups, $p < .05$