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Economic Hardship and Adolescent Problem Drinking: Family Processes as Mediating Influences

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Abstract

Alcohol is the most commonly used substance among adolescents in the United States, and adolescent drinking is associated with various health risk behaviors. Given the prevalence and consequences of adolescent drinking, understanding family factors that contribute to adolescent drinking is an important area for research. This study used three waves of data to evaluate a family stress model in which economic hardship is indirectly related to adolescent problem drinking through maternal psychological distress, parenting behaviors, and adolescent externalizing behaviors. Respondents included 300 mothers (71 % Black, 29 % White) and adolescents (51 % male) who were interviewed when adolescents were ages 10, 14, and 16. Structural equation modeling was used to test the hypothesized model and findings supported our hypothesized model. Economic hardship was positively related to maternal psychological distress. Maternal psychological distress was negatively associated with supportive parenting, which in turn was negatively associated with externalizing problems. Externalizing problems were positively associated with problem drinking. In support of our hypothesis regarding indirect effects, economic hardship was indirectly related to problem drinking through maternal psychological distress, parenting behaviors, and adolescent externalizing problems. The findings from this study highlight the role of family processes in adolescent problem drinking.

Keywords

Family stress model; Economic hardship; Psychological distress; Parenting; Adolescents; Externalizing problems; Alcohol use; Problem drinking

Introduction

Family stress models have been used to explain how economic hardship influences family processes and ultimately affects children's socioemotional adjustment (Conger et al. 1994; Lee et al. 2013; McLoyd 1990). These models suggest that economic hardship increases

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Author contributions

CH conceived of the study, designed the study, performed the statistical analysis, and drafted the manuscript. MC collected the original data for this cohort and provided input on the manuscript's study design and editing. Both authors read and approved the final manuscript.

parents' psychological distress. Parents experiencing psychological distress are more likely to engage in negative parenting practices that increase children's adjustment problems (Conger et al. 2010).

Family stress models have been particularly important in explaining processes related to children's externalizing behavior problems. For example, economic pressure increases risks for externalizing problems indirectly by increasing financial conflicts between parents and adolescents and increasing parental hostility toward adolescents (Conger et al. 1994). Other work demonstrates that perceptions of economic pressure are associated with parents' psychological distress, which is related indirectly to children's behavior problems through disruptions in parental disciplinary efficacy (Mistry et al. 2002).

Although some studies examining family stress models have focused on adolescent externalizing problems, less attention has been paid to adolescent alcohol use outcomes. Given the link between family processes related to economic stress and children's externalizing problems, it is plausible that family stress models can be extended to include adolescent alcohol use. Externalizing behaviors are one of the best established pathways to adolescent alcohol use (Zucker et al. 2008). Externalizing behaviors, including delinquent behavior (Jessor and Jessor 1975), aggression (Englund and Siebenbruner 2012; Kellam et al. 1982), conduct problems (Elkins et al. 2007; Fergusson et al. 2007), conduct disorder, and oppositional defiant disorder (Larkby et al. 2011; McGue et al. 2001) are associated with adolescent drinking. A recent study found evidence for a model in which conduct problems predicted girls' alcohol use. In this study, no evidence was found for a competing model in which alcohol use predicted conduct problems (Loeber et al. 2010). In line with these findings, longitudinal studies have demonstrated that prior conduct problems predict alcohol use during adolescence (King et al. 2004; Kuperman et al. 2005).

Adolescent drinking is an important outcome to focus on because adolescence is a critical developmental period when patterns and behaviors of alcohol use are formed (Zucker 2008). The most recent Monitoring the Future survey of U.S. students in 2012 shows that 30, 54, and 69 % of 8th, 10th, and 12th graders, respectively, have had experience with alcohol (Johnston et al. 2013). Of greater concern is the use of alcohol to the point of inebriation: in the same year, 13 % of 8th graders, 35 % of 10th graders, and 54 % of 12th graders said they had been drunk at least once in their lifetime (Johnston et al. 2013). Further, many studies report a steady increase in drinking that corresponds with the transition from middle to high school (Colder et al. 2002; Guo et al. 2002; Wiesner et al. 2007). Early onset of alcohol use and problem use are associated with other risky behaviors including other drug use, driving while under the influence, sexual risk taking, and co-occurring difficulties, such as school failure, aggression, and problems with the law (Donovan and Molina 2011).

Family functioning may play a key role in the development and course of adolescent drinking (Ryan et al. 2010). A large body of research suggests that high quality parent-adolescent relationships protect adolescents against socioemotional adjustment problems, including delinquency, substance use, and depression (Aseltine et al. 1998; Conger et al. 1994; Steinberg 2001). Parental monitoring, in particular, decreases the likelihood that adolescents will associate with substance-using peers and engage in substance (Patterson et

al. 1989) and alcohol use (Engels et al. 2005; Ryan et al. 2010). The quality of the parent–child relationship also predicts lower levels of later alcohol use among adolescents (Ryan et al. 2010).

One of the only studies that has applied a family stress model to adolescent drinking provides support for additional research in this area. Conger et al. (1991) investigated how family stress processes were related to drinking among early adolescents, using a sample of 76 White, rural, two-parent families. This study found that family economic pressure was positively related to parents' depressed hostile mood. Parents' depressed hostile mood, in turn, was related to greater hostility toward spouses and children. Hostility toward children (but not hostility toward spouses) was related to adolescent antisocial behavior, which was indirectly related to the frequency of adolescent alcohol use through adolescents' association with antisocial friends. Two limitations of this study were the small sample size and the cross-sectional design. The findings from this study have yet to be replicated, and overall, few studies have applied family stress models to adolescent drinking.

The Current Study

Our goal for the current study was to build on the findings of Conger et al. (1991) using a larger sample and examining a similar process model longitudinally. Specifically, this study evaluated a family stress model in which economic hardship is indirectly related to adolescent problem drinking through maternal psychological distress, parenting behaviors, and adolescent externalizing behaviors. Figure 1 presents a graphic illustration of our hypothesized model. Our primary hypothesis is that maternal psychological distress, parenting practices, and adolescent externalizing behaviors will mediate the relationship between economic hardship and adolescent problem drinking. We expect that economic hardship will be associated with greater maternal psychological distress and that maternal psychological distress will be associated with lower levels of supportive parenting. Lower levels of supportive parenting will be related to higher levels of adolescent externalizing behavior, which, in turn, will be related to more adolescent problem drinking. Significant indirect effects are expected from economic hardship to adolescent problem drinking through the described pathways.

We focused on a sample comprised of mostly single-parent, African American families living in an urban setting. Our sample is also unique in that it is comprised of women who were adolescent mothers and their offspring. Teenage mothers are more likely to be from economically disadvantaged backgrounds and to face ongoing economic disadvantage after the child's birth (Mollborn and Dennis 2012; Shaw et al. 2006; SmithBattle 2007). As a group, adolescent mothers are disproportionately single parents (Mollborn and Dennis 2012), giving them less access to some of the economic and mental health benefits conferred through marriage (Gillmore et al. 2008; Kalil and Kunz 2002). Adolescent mothers also appear to be at greater risk for psychological distress before teenage childbearing and over the life course (Mollborn and Morningstar 2009; Shaw et al. 2006). In terms of parenting and child outcomes, some studies suggest that teenage mothers exhibit less optimal parenting practices relative to older mothers (Lee 2013; Lewin et al. 2013) and that adolescent children of teenage mothers are more likely to have behavior and substance use

problems (Harden et al. 2007; Shaw et al. 2006). There is also evidence that growing up in a single parent family, more generally, is a risk factor for adolescent drinking (Brown and Rinelli 2010; Oman et al. 2007).

Although family stress models have been replicated in low-income samples and diverse samples, thus far, family stress models have not been tested on samples exclusively comprised of women who were adolescent mothers and their offspring. Given the vulnerability of adolescent mothers and their offspring, family stress models are particularly applicable and important to study in this population. A strength of the current study is that we use multiple indicators of parenting and adolescent drinking. Our measure of parenting includes communication, family interaction, time spent together, and supervision. Adolescent drinking—namely problem drinking—includes binge drinking, intoxication, and average daily volume. We also include multiple informants and multiple measures to assess the other focal constructs (economic hardship, maternal psychological distress, and adolescent externalizing behaviors).

Methods

Study Design

Data for this study are drawn from the Teen Mother Study, which is part of the Maternal Health Practices and Child Development project, a consortium of studies on the long-term effects of prenatal substance use. This study was a naturalistic examination of substance use during pregnancy among teenagers and the effects of substance exposure on offspring outcomes. Pregnant adolescents were recruited from the Magee-Womens Hospital prenatal clinic in Pittsburgh, Pennsylvania from 1990 to 1994. There was no oversampling of substance use; all pregnant adolescents who attended the prenatal clinic were eligible for the study. Participants were seen during a prenatal visit in the first half of pregnancy and at delivery with their newborn infants. The initial participation rate was 99 %. There were 413 live born singletons at the delivery phase. Follow-up visits were conducted with mothers and their children in our laboratory when offspring were ages 6 (1995–2000), 10 (2000–2005), and 14 and 16 (2005–2011). The Institutional Review Boards of the Magee-Womens Hospital and the University of Pittsburgh approved each phase of this study.

Participants

Mothers and children were interviewed by trained interviewers and completed self-report measures in office. At each assessment, the teenage mothers reported on their sociodemographic information, psychological symptoms, parenting, and home environment. The mothers also completed scales rating their child's behavior. At the age 14- and 16-year assessments, the children reported their own behavior and substance use. Reports on maternal substance use, growth and behavioral outcomes of the offspring at birth, 6, 10, and 14 years have been provided elsewhere (Cornelius et al. 2012).

The present study focuses on the mothers and their offspring at the 10-, 14-, and 16-year follow-up phases. Sample sizes at 10, 14, and 16 years were 330, 318, and 334, representing retention rates of 80, 77, and 81 % of the total number at birth, respectively. The final

sample for the current study is comprised of 300 mother–child pairs, after cases with missing covariates were deleted using listwise deletion. Of the 300 mother–child pairs, 71 % of mothers were Black and 29 % were White. The majority of mothers were unmarried (76 %). Eighty-eight percent of mothers had completed at least 12 years of school and mean monthly household income was \$1,796 ($SD = \$1,488$) at age 10. The sample included 148 girls and 152 boys. Mean adolescent age was 10.33 years ($SD = 0.53$; range = 9.81–12.54), 14.43 years ($SD = 0.55$; range = 13.85–16.28), and 16.53 years ($SD = 0.64$; range = 15.93–19.53) at the age 10-, 14-, and 16-year follow-ups, respectively. Families who were included in the sample for the present study did not significantly differ from those who were not included with respect to annual household income, primary caregiver education level, child gender, marital status, and employment status at the birth assessment. Whites were less likely to be included in the analytic sample than Blacks $\chi^2(1) = 9.60, p < .01$ and mothers not included in the analytic sample ($M = 16.52, SD = 1.10$) were slightly older at the child's birth than those included ($M = 16.23, SD = 1.22$).

Measures

Economic hardship and maternal psychological distress were assessed at age 10. Supportive parenting and externalizing behaviors were assessed at age 14. The dependent variable, problem drinking, was assessed at age 16. Covariates from age 10 were also included in the model.

Economic Hardship—Three variables, assessed at age 10, were used as indicators for the latent construct economic hardship: income, ability to handle bills, and financial strain. Mothers reported their monthly family income. Monthly income was multiplied by -1 , so that the factor loading would have the same sign as the factor loadings for the other indicators. One item was used to assess ability to handle bills. Mothers were asked to rate their ability to handle money/bills on a 5-point Likert scale ranging from 1 (*always in control*) to 5 (*always out of control*). Three items ($\alpha = .73$) from the maternal interview were used to assess financial strain, including how often mothers were short of money at the end of the month, could not buy essential things for their child, and could not do extra things for their child. The 5-point response scale ranged from 1 (*never*) to 5 (*all the time*).

Maternal Psychological Distress—Maternal psychological distress was measured by a latent construct with 3 indicators: depression, anxiety, and hostility. Each indicator of maternal psychological distress was assessed at age 10. The Center for Epidemiological Studies on Depression Scale (CES-D; Radloff 1977) was used to assess depression. Primary caregivers indicated on a 4-point scale, ranging from 1 (*never*) to 4 (*most of the time*), how often they experienced each of 20 symptoms. Four items were reverse coded and the scale score was computed by summing the twenty items. Internal consistency for the CES-D was .90. Ten items adapted from the State-Trait Anxiety Inventory that measure state and trait anxiety were used to assess anxiety (e.g., “I feel nervous and restless”; Spielberger et al. 1970). Ten items from the State-Trait Anger Expression Inventory were used to assess hostility (e.g., “I fly off the handle”; Spielberger 1996). Mothers indicated on a 4-point scale, ranging from 1 (*almost never*) to 4 (*almost always*), how they felt about items

measuring anxiety ($\alpha = .86$) and items measuring hostility ($\alpha = .86$). Items were summed to compute each subscale score.

Supportive Parenting—Four subscales from the Loeber Youth Questionnaire, developed for the Pittsburgh Youth Study (Loeber et al. 1998), were used as indicators for the latent construct supportive parenting: communication, family interaction, time spent together, and supervision. Mothers completed this measure at age 14. The communication subscale (4 items; $\alpha = .67$; e.g., “When was the last time that you discussed with your child plans for the coming day?”) focuses on when and how often parents discuss their child’s plans and daily activities. The family interaction subscale (6 items; $\alpha = .76$; e.g., “Do you and your child do things together at home?”) focuses on parent–child participation in activities in and outside of the home. The time spent together subscale (4 items; $\alpha = .77$; e.g., “On average, how much time each day are you together with your child on weekdays, that is, when you and your child are both awake?”) assesses how much time parents and their children are together on weekdays and weekends in general and engaging in activities (e.g., playing a game). The supervision subscale (4 items; $\alpha = .59$; e.g., “Do you know who your child’s companions are when he/she is not at home?”) focuses on parents’ knowing their child’s friends and supervising their child when parent and child are apart. The development and reliability and validity of the Loeber Youth Questionnaire have been described (Jacob et al. 2000).

Externalizing Problems—Parent and adolescent reports of rule-breaking and aggressive behavior at age 14 were used as indicators of externalizing problems. Parents completed the aggressive behavior (18 items; $\alpha = .88$) and rule-breaking (17 items; $\alpha = .77$) sub-scales of the Child Behavior Checklist (CBCL; Achenbach 1991). Adolescents completed the aggressive behavior (17 items; $\alpha = .84$) and rule-breaking (12 items; $\alpha = .71$) sub-scales of the Youth Self Report and Profile (YSR; Achenbach and Rescorla 2001). The CBCL includes a 3-point response scale where by mothers respond to a series of items focusing on how true particular problem behaviors are of their child (i.e., *not true, somewhat or sometimes true, very true or often true*). Adolescents completing the YSR respond to a series of statements on the same response scale, indicating how well each item describes their behavior. Three items from the YSR that focused on substance use were not included in the computation of scores for the rule-breaking behavior subscale. Externalizing behavior assessed at age 10 was used as a covariate. Mothers completed the externalizing scale (33 items; $\alpha = .91$) of the CBCL, which is comprised of the aggressive behavior and delinquent behavior subscales (Achenbach 1991). The response scale is the same as that of the YSR.

Problem Drinking—Problem drinking is a latent construct comprised of average daily volume, intoxication, and binge drinking. Average daily volume included beer, wine, liquor, and alcoholic coolers. For each type of alcohol, quantity of alcohol (i.e., number of cans, bottles, glasses, or shots) was multiplied by the frequency of alcohol use to calculate average daily volume. Scores for frequency of alcohol use were coded to reflect alcohol use per day (*everyday* = 1, *5–6 times a week* = .78, *3–4 times per week* = .5, *1–2 times a week* = .2, *2–3 times a month* = .08, *once a month* = .03, *6–11 times a year* = .02, *1–5 times a year* = .01). Average daily volume is the sum of the quantity $\times$ frequency scores for beer, wine, liquor, and alcoholic coolers. To assess intoxication, adolescents were asked how often they got

drunk or very high on alcohol in the past year. To measure binge drinking, girls were asked to indicate how often they drank 4 or more drinks per occasion and boys were asked how often they drank 5 or more drinks per occasion on a 9-point response scale ranging from 0 to 8 (1 = *everyday*, 8 = *1–5 times a year*). Response scales for intoxication and binge drinking were coded in the same manner as average daily volume.

Covariates—In addition to age 10 externalizing behaviors, six other covariates were included in this study. The sociodemographic covariates were maternal education at age 10 (number of years), marital status at age 10 (0 = *not married*, 1 = *married*), child gender (0 = *female*, 1 = *male*), child age at age 16, and race (0 = *African American*, 1 = *White*). Current maternal alcohol use at the age 10 follow-up phase was assessed by average daily volume, which was measured in a manner that paralleled adolescents' average daily volume.

Data Analysis

Structural Equation Modeling in Mplus version 6.11 was used to test the hypothesized model (Muthén and Muthén 1998–2007). Mplus handles missing data using full information maximum likelihood (FIML) estimation, which yields parameter estimates that tend to be less biased than those generated by ad hoc missing data techniques (e.g., listwise deletion; Schafer and Graham 2002). FIML uses all available data to estimate parameters, thus cases that do not have complete data for all of the variables tested in the model can still be included in the analyses. Unlike imputation methods for handling missing data, which assign values for each missing data point, FIML uses an iterative procedure to generate the parameters of the population most likely to have produced the available sample data. The percent of missing data on all variables ranged from 0 to 13 % (Table 1).

To test indirect effects, bias corrected bootstrapped confidence intervals based on 5000 bootstrap resamples were estimated. Bias corrected bootstrap methods provide empirical estimates of indirect effects that accommodate nonnormality of the sampling distribution of the indirect effect. A significant indirect effect is indicated when the confidence interval for the point estimate of the indirect effect does not include zero (Preacher and Hayes 2008). Primary caregiver education at age 10, marital status at age 10, race, and caregivers' alcohol use at age 10 were included as direct paths to each latent construct. Direct paths from child gender and age 10 externalizing behaviors to age 10 maternal psychological distress, age 14 supportive parenting, age 14 externalizing behaviors, and age 16 problem drinking were specified. A direct path from child age at age 16 to problem drinking was also specified (Table 3).

Results

Variable descriptives and bivariate correlations are presented in Tables 1 and 2. The test of the hypothesized model revealed several significant relationships between the covariates and the focal latent constructs (Table 3). Whites had higher levels of maternal psychological distress at age 10 than African Americans. Age 10 externalizing behaviors were significantly related to age 10 maternal psychological distress, age 14 supportive parenting, and age 14 externalizing behaviors. Maternal alcohol use at age 10 was positively related maternal

psychological distress at age 10. Maternal education at age 10, marital status at age 10, and child gender were not related to any of the latent constructs in the model.

Fit indices suggested that the hypothesized indirect effects model provided acceptable fit to the data, $\chi^2(202, N = 300) = 433.63, p < .01$; Comparative Fit Index (CFI) = .92; *Tucker–Lewis Index* (TLI) = .90; root mean square error of approximation (RMSEA) = .06.

Predictors in the model explained 9 % of the variance in economic hardship, 39 % of the variance in maternal psychological distress, 21 % of the variance in supportive parenting, 57 % of the variance in externalizing problems, and 22 % of the variance in problem drinking. Direct effects were consistent with our hypotheses. Economic hardship at age 10 was not related to problem drinking at age 16 ($\beta = -.03, ns$). As shown in Fig. 2, economic hardship was positively related to maternal psychological distress ($\beta = .50, p < .01$).

Maternal psychological distress was negatively associated with supportive parenting behaviors ($\beta = -.31, p < .01$). Supportive parenting behaviors were negatively associated with externalizing problems ($\beta = -.42, p < .05$). Externalizing problems were positively associated with problem drinking ($\beta = .56, p = .05$). To test for mediation, we used the bootstrap methodology previously described. In support of our hypothesis regarding mediation, economic hardship was indirectly related to problem drinking through maternal psychological distress, parenting behaviors, and externalizing problems ($CI_{.95} = .02, .16$).

Discussion

Given the prevalence and consequences of adolescent drinking, examining how family factors contribute to adolescent drinking is an especially important area of research. The present study was designed to illuminate one pathway through which family functioning may contribute to adolescent drinking. Specifically, we used three waves of longitudinal data to investigate family processes linking economic hardship to adolescent problem drinking. We tested the hypothesis that the relationship between economic hardship and adolescent problem drinking is mediated by maternal psychological distress, parenting behavior, and adolescent externalizing behaviors. The results of the tested model were consistent with our predictions. We found that economic hardship was related to higher levels of maternal psychological distress, and that maternal psychological distress was associated with less supportive parenting. Less supportive parenting was associated with adolescent externalizing problems, and adolescents with higher levels of externalizing problems were more likely to engage in problem drinking. In support of our overall hypothesis regarding mediation, economic hardship was indirectly related to problem drinking through maternal psychological distress, parenting behaviors, and externalizing problems. Our findings suggest that economic hardship may heighten maternal psychological distress and that maternal psychological distress is related to adolescent problem behavior through less optimal parenting behavior.

The findings from the present study extend the work of Conger et al. (1991), which found that family economic pressure was related to the frequency of adolescent alcohol use through parents' depressed hostile mood, parents' hostility toward their children, adolescent antisocial behavior, and adolescents' association with antisocial friends. In contrast to Conger et al. (1991), our study is based on a larger sample, utilizes a longitudinal research

design, and focuses on older adolescents. Examining alcohol use among older adolescents is particularly important given that alcohol use tends to increase over the period of adolescence (SAMHSA 2012). Whereas Conger et al. (1991) focused on a sample of two-parent White families, the majority of our sample was comprised of single-parent, African American families. Although family stress models have been replicated in diverse samples (Conger et al. 2010), few if any of these studies have focused on adolescent alcohol use. Also, unlike Conger et al. (1991), we included maternal alcohol use as a covariate to account for the role that maternal alcohol use may play in adolescent alcohol use and the ways in which maternal alcohol use may influence parenting behaviors. In our analyses, maternal alcohol use was not associated with adolescent drinking or parenting behaviors, despite past studies showing that adolescents are more likely to report drinking when they have seen either parent using alcohol (Hoque and Ghuman 2012).

Our study is one of only a small number of studies that has focused on how family economic circumstances are related to adolescent drinking. The few studies that have examined the role of family economic circumstances in adolescent drinking have provided mixed findings (Hanson and Chen 2007). Some studies report greater alcohol use among adolescents from higher SES backgrounds (Blum et al. 2000; Goodman and Huang 2002; Melotti et al. 2011), while other studies show that low SES is a risk factor for alcohol use (Lemstra et al. 2008; Sutherland 2012) or find no such relationship (Cubbin et al. 2011). Some of the discrepancies in findings stem from the type of SES measure (e.g., income, education, occupation, or composite measure) used and the SES range represented in each sample. Although the focus of the current study was not on SES as traditionally measured, we built on this literature using a multidimensional measure of economic hardship and by investigating an indirect pathway from economic hardship to adolescent drinking. Existing studies have almost exclusively examined direct relationships between SES and adolescent drinking.

In this study, the combination of having low-income, lacking material resources, and having difficulty meeting financial obligations appeared to be detrimental to mental health and to have long-term negative consequences for the family. Also past studies have shown that adolescent mothers are at particularly high risk for long-term economic hardship. These findings highlight multiple avenues for intervention, including helping to alleviate economic hardship or providing supports that help minimize resultant psychological distress. Interventions that promote positive family interactions among low-income families also hold promise for improving adolescent outcomes (Wadsworth et al. 2011). Studies have shown that adolescence is a particularly vulnerable period for the children of teenage mothers compared to other youth (Harden et al. 2007; Shaw et al. 2006).

The results of this study also underscore the role of parental influences on adolescents' alcohol use. Our results are consistent with past studies showing relationships from parents' emotional well-being and parenting behaviors to adolescent alcohol use. Research has shown that mothers' serious maternal psychological distress is associated with adolescent binge drinking (Herman-Stahl et al. 2008). Other studies focusing on parenting behaviors and parent-child interactions have found that behaviors and practices, such as authoritative parenting, monitoring, and communication deter adolescent alcohol use (Bahr and Hoffmann

2010; Barnes et al. 2006; Ryan et al. 2010). For example, Simons-Morton and Chen (2005) found that parental monitoring, involvement, and expectations around substance use had protective effects against adolescent drinking. Our study contributes to this literature using a multidimensional parenting construct that captures multiple aspects of parenting and the parent–child relationship.

There are several limitations that should be noted. One limitation is that our study did not include assessments of interactions involving the parental relationship or maternal romantic relationships. Past work has shown that relationship conflict and hostility is a key mediator in family stress models (Conger et al. 2010). Future studies should include assessments of coparenting and romantic relationships that may impact adolescent behavior. Another limitation is that, unlike some other family stress model studies (Conger et al. 1991; Mistry et al. 2002), we were not able to include observational measures of family interactions. Future studies that include observational measures in addition to self-report measures are warranted. Also, some of the constructs in this study were measured at the same time point; therefore the direction of effects cannot be determined. Future studies that measure each focal construct at different time points and adjust for prior levels of all mediators and outcomes will allow for stronger inferences about the directionality of effects. In addition, the fact that our sample is comprised of former adolescent mothers and their offspring may limit the generalizability of the results to an extent, although recent research suggests that women who were adolescent mothers and their offspring tend to have outcomes—in most domains—that parallel their counterparts from similar backgrounds who delayed childbearing (SmithBattle 2009). Thus, the findings from this study are generalizable to other low-income families.

Despite the above limitations, the current study has important strengths. These strengths include a longitudinal design, the inclusion of reports from multiple informants, and the use of multidimensional latent constructs. We replicated the family stress model using a sample of women who were adolescent mothers and their children. Our sample is noteworthy given that long-term longitudinal studies of adolescent mothers and their children are relatively rare. Further, we extended research on the family stress model by including problem drinking as an outcome. Most prior applications of the family stress model have focused on other child and adolescent outcomes.

Conclusion

This study examined the family stress model longitudinally in a sample of low-income women who were teenage mothers and their adolescent offspring. The findings from this study highlight the role of family processes in adolescent problem drinking. They suggest that psychological distress caused by economic hardship may increase negative family interactions that promote externalizing behaviors that heighten problem drinking. The results are consistent with prior work and provide support for applying the family stress model to adolescent problem drinking.

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Fig. 1.
Hypothesized model linking economic hardship to adolescent problem drinking

Fig. 2.

Path model of relations among study variables $*p < .05$; $**p < .01$, † variable used to set the scale for the latent constructs. *Note* Standardized estimates are presented. Direct paths from economic hardship to problem drinking ($\beta = -.03$, ns) and supportive parenting to problem drinking ($\beta = .36$, ns) are not shown. Mothers' education, marital status, child gender, race, age 10 externalizing behaviors, and maternal alcohol use were included as covariates. M = maternal report and C = adolescent report

Table 1

Descriptive statistics for study variables

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>	% missing
Maternal education (10)	300	7.00	18.00	12.56	1.38	.00
Maternal alcohol use (10)	300	.00	11.84	.76	1.43	.00
Child age (16)	300	15.93	19.53	16.53	.64	.00
Externalizing behavior (10)	300	.00	44.00	10.07	8.18	.00
Income (10)	298	−9.99	.00	−1.80	1.49	1.00
Ability to pay bills (10)	300	1.00	5.00	2.31	.94	.00
Financial strain (10)	300	1.00	5.00	2.46	.83	.00
Depressive symptoms (10)	299	20.00	75.00	39.04	9.92	.00
Anxiety (10)	299	10.00	36.00	15.95	5.22	.00
Hostility (10)	299	10.00	38.00	15.53	4.73	.00
Communication (14)	281	1.00	4.00	3.56	.55	6.33
Family interaction (14)	281	1.17	3.00	2.43	.39	6.33
Time spent together (14)	279	1.00	5.00	3.66	.77	7.00
Supervision (14)	267	1.75	3.00	2.87	.25	11.00
Rule-breaking (C, 14)	267	.00	14.00	3.91	2.93	11.00
Aggressive behavior (C, 14)	282	.00	24.00	6.93	5.24	6.00
Rule-breaking (M, 14)	282	.00	17.00	3.21	3.19	6.00
Aggressive behavior (M, 14)	296	.00	32.00	5.26	5.11	1.33
Average daily volume (16)	296	.00	13.19	.18	.93	1.33
Intoxication (16)	296	.00	1.00	.02	.08	1.33
Binge drinking (16)	260	.00	1.00	.01	.07	13.33

M = maternal report and C = adolescent report. Numbers in parentheses represent the age at which the variable was assessed

Table 2

Intercorrelations between study variables

Study variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Income (10)	–															
2. Ability to pay bills (10)	.17**	–														
3. Financial strain (10)	.32**	.58**	–													
4. Depressive symptoms (10)	.26**	.39**	.38**	–												
5. Anxiety (10)	.21**	.38**	.37**	.78**	–											
6. Hostility (10)	.16**	.25**	.32**	.55**	.62**	–										
7. Communication (14)	–.15*	.07	–.05	–.12*	–.17**	–.21**	–									
8. Family interaction (14)	–.10	–.18**	–.20**	–.19**	–.25**	–.12*	.28**	–								
9. Time spent together (14)	–.07	–.19**	–.28**	–.15*	–.23**	–.14*	.06	.45**	–							
10. Supervision	–.20**	–.20**	–.15*	–.17**	–.24**	–.16**	.37**	.42**	.35**	–						
11. Rule-breaking (C, 14)	.05	.10	.06	.12*	.13*	.10	.01	–.21**	–.17**	–.09	–					
12. Aggressive beh. (C, 14)	.02	.11	.08	.19**	.16**	.19**	.01	–.10	–.13*	–.04	.65**	–				
13. Rule-breaking (M, 14)	.14*	.13*	.17**	.25**	.28**	.16*	–.16**	–.43**	–.28**	–.38**	.37**	.26**	–			
14. Aggressive beh. (M, 14)	.09	.15*	.20**	.27**	.29**	.24**	–.17**	–.38**	–.30**	–.32**	.30**	.27**	.76**	–		
15. Alcohol daily vol. (16)	.02	–.01	–.08	.00	.04	.00	.03	–.09	–.04	.03	.28**	.23**	.24**	.15*	–	
16. Intoxication (16)	.01	.00	–.06	.01	.06	.05	.03	–.07	–.05	.03	.29**	.21**	.18**	.11	.92**	–
17. Binge drinking (16)	.03	–.03	–.08	–.01	.02	.00	.08	–.07	–.03	.04	.16**	.18**	.14*	.11	.93**	.89*

M = maternal report and C = adolescent report. Numbers in parentheses represent the age at which the variable was assessed. Income was multiplied by –1

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

Table 3

Relations between covariates and latent constructs

Predictor	Dependent variable	β
Race	Economic hardship	-.06
	Maternal psychological distress	.19**
	Supportive parenting	.12
	Externalizing behavior	.05
	Problem drinking	-.04
Child gender	Economic hardship	-
	Maternal psychological distress	-.07
	Supportive parenting	-.13
	Externalizing behavior	-.09
	Problem drinking	.06
Child age (16)	Economic hardship	-
	Maternal psychological distress	-
	Supportive parenting	-
	Externalizing behavior	-
	Problem drinking	.26
Maternal education (10)	Economic hardship	-.19
	Maternal psychological distress	.04
	Supportive parenting	.02
	Externalizing behavior	-.01
	Problem drinking	-.06
Marital status (10)	Economic hardship	-.17
	Maternal psychological distress	-.09
	Supportive parenting	-.00
	Externalizing behavior	-.05
	Problem drinking	-.04
Maternal alcohol use (10)	Economic hardship	.06
	Maternal psychological distress	.16*
	Supportive parenting	.02
	Externalizing behavior	.04
	Problem drinking	-.03
Externalizing behavior (10)	Economic hardship	-
	Maternal psychological distress	.26**
	Supportive parenting	-.22**
	Externalizing behavior	.50**
	Problem drinking	-.22

M = maternal report and C = adolescent report. Numbers in parentheses represent the age at which the variable was assessed

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