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Family Transitions and Later Delinquency and Drug Use

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Abstract

Changes in the family structure can be very disruptive to adolescents who live in those families. This article examines the impact of the number of family transitions on delinquent and drug-using behavior. Specifically, the effect of family transitions is hypothesized to be mediated by problems within the family, school, and peer settings. A sample of 646 boys (73%) and girls (27%) taken from a longitudinal panel study of high-risk adolescents are used to examine these hypotheses. For girls, little support is found for the direct or the indirect effect of family transitions on delinquent behavior or drug use. For boys, however, both forms of problem behavior are influenced by family transitions directly and indirectly through changes in, and problems with, peer associations. The findings suggest that during times of family turmoil, the friendship network of adolescent male children is also disrupted, leading to an increase in associations with delinquent others and, in turn, an increase in problematic behaviors.

Disruption in family structure has been identified as a potentially traumatic event in the lives of all family members, especially children. Much early research focused on the breakup of previously intact families, some of which found relationships among the breakup of a family and problematic outcome measures such as drug use and delinquency (Butters, 2002; Demuth & Brown, 2004; Haas, Farrington, Killias, & Sattar, 2004; Juby & Farrington, 2001). However, these findings were mixed and, in some cases, when the relationship between children and the parent who remained in the home was also examined, the quality of the relationship was a more important factor than the dissolution of the parental relationship (Demuth & Brown, 2004; Martinez & Forgatch, 2002). These findings point to the need for further explanation of other factors that may influence the relationship between family disruption and delinquent outcomes.

Simply looking at whether parents decide to live apart may no longer be adequate given both the prevalence and incidence of changes in family structure in American society. For example, within the Rochester Youth Development Study (RYDS) sample, only 25% of

respondents lived in a home with both biological parents at the beginning of the study in 1988. Moreover, the family structure can change multiple times within a relatively short period. Changes in family structure include both the departure and the appearance (or re-appearance) of a parent or guardian. Within the first two-and-a-half years of data collection, some of the respondents in the RYDS experienced as many as four transitions in their family structure. This volatility in family life has traumatic effects on children, potentially affecting a number of arenas of their lives and ultimately altering their life course and life chances. The impact of changes in the family structure on family and peer relationships, and problems encountered in the school arena and, in turn, the effect these outcomes have on delinquent behavior and drug use are examined in this article. The following review begins with an examination of the explanations for why family transitions may lead to problematic outcomes for children.

Theoretical Explanations of the Impact of Family Transitions

There are a number of potential reasons why a change or changes in the structure of the family may have an impact on delinquent behavior and other adverse outcomes (Carlson & Corcoran, 2001; Juby & Farrington, 2001; Pryor & Rodgers, 2001). Among the potential consequences of family transitions that can lead to problematic behaviors are changes in the economic well being of the family (Martinez & Forgatch, 2002; Ram & Hou, 2003), tensions among family members and the ability of adults in the household to parent effectively (Carlson & Corcoran, 2001; Martinez & Forgatch, 2002; Ram & Hou, 2003; Wu & Thomson, 2001), the stress that results from changes in family organization (Carlson & Corcoran, 2001; Ruschena, Prior, Sanson & Smart, 2005), problems with, and changes in, the peer group (Kirby, 2006; Warr, 2002), and problems in the school arena (Aquilino, 1996; Brown, 2006). Pryor and Rodgers (2001) present three broad categories of theoretical perspectives: trauma theories, stress and resource theories, and life-course transition theories. These perspectives incorporate the abovementioned outcomes into general perspectives on the effects of family transitions, and will be used to inform the current study.

Trauma theories

Changes in family structure, particularly when they involve the separation from, or loss of, a parental figure, can have a profound effect on children. These effects will be manifest later in life regardless of intervening factors. The more transitions experienced, the more likely the child will experience psychological problems such as stress and depression.

Folded into the Pryor and Rodgers trauma theory category is the recognition of the potential importance of attachment between the child and parents. Transitions in the family structure can affect attachment. Some research has demonstrated the adverse effect that a disruption in the relationship between one or more parents and the child has on outcomes ranging from school performance (Heard, 2007; Jeynes, 2006; Ruschena et al., 2005; Storksen, Roysamb, Moum & Tambs, 2005) to delinquent behavior (Juby & Farrington, 2001; Keller, Catalano, Haggerty & Fleming, 2002; Kirby, 2006; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998; Rebellon, 2002; Wu & Thomson, 2001). However, Pryor and Rodgers (2001) suggest that the impact of attachment in instances of family disruption is more ambiguous than the theory suggests. Children may remain attached to the parent who remains in the household and such attachment may be sufficient to offset the trauma caused by family disruption. Hence, research on growing up in a single-parent family indicates that the quality of the relationship to the parent is more important than family structure (Demuth & Brown, 2004; Martinez & Forgatch, 2002).

Stresses and Resources

A second category of theoretical perspectives used to understand the impact of family transitions is stresses and resources. These approaches are analogous to risk and protective approaches wherein the balance of good and bad stresses and resources are compared in order to predict outcomes for children who experience family transitions (Pryor & Rodgers, 2001). Among factors that are considered are sociocultural factors (e.g., socioeconomic status, neighborhood characteristics), family factors (e.g., cohesion and support, disciplinary methods), and child-based factors (e.g., temperament and genetic makeup).

The difficulty with this approach is that it tends to group preexisting factors that may cause family disruptions, such as socioeconomic conditions, with factors that may result from the transition. While the accumulation of risk factors compared to protective factors very well may predict adverse outcomes, it is difficult to determine whether they are caused by family transitions or they represent selection factors that predict those families most likely to experience transitions. For this reason, it is important to employ longitudinal data and to control for both prior existing and post-transition adverse outcomes in analyses. As Pryor and Rodgers (2001) point out, many of the stresses and resources included in this approach are incorporated into other theoretical perspectives, particularly life-course theories. Life-course theories provide a more dynamic way of examining many of these issues and this approach is summarized next.

Life-Course Theories

Life-course theories recognize the importance of how events in a person's life can alter a multiplicity of factors that accumulate and impact behavior. The life-course perspective is particularly germane when examining family transitions because it does not use only one discrete event, like a divorce, and predict outcomes from it. Rather, the life-course perspective can accommodate multiple and interrelated events, such as a series of family transitions. Moreover, it explicitly acknowledges that an accumulation of ensuing problems may also be interrelated, changing the course of one's life and diminishing one's life chances (Sampson & Laub, 1993; Thornberry & Krohn, 2005). The accumulation of interrelated problems is of particular concern to the examination of the impact of family transitions on problematic behaviors in the current study.

Pryor and Rodgers (2001) identify four principles that life-course theories take into consideration: the time and place in which a child develops, the timing of events in a child's life, human agency, and linked lives. Essentially, the principle of linked lives recognizes that children function within a context of social relationships that can be determinative of emotional and behavioral outcomes. These relationships can become intertwined so that disruptions in one arena may not only affect the type and quality of relationships within that arena, but also extend to relationships within other arenas of a person's life. Importance is placed on the principle of linked lives when considering the impact of family transitions in this article.

Applying this principle to family transitions leads to a focus on not only the impact of transitions on family functioning, including family hostility and parenting, but also to an examination of how changes in the interaction patterns within the family affect the child in other arenas such as school and peer relationships. Pryor and Rodgers (2001) specifically identify Bronfenbrenner's (1989) ecological theory to illustrate this perspective, but other developmental theories (Farrington, 2005; Moffitt, 1993; Thornberry & Krohn, 2005) share this principle. The focus on the interrelationship among these arenas of youths' lives has been investigated in prior research on changes in the family structure.

Research on divorce and similar types of family transitions indicates that disruptions in the family result in some loss in the effectiveness of parenting because of the increased difficulty in monitoring and supervising the child or because of hostility and lower attachment caused by the addition or subtraction of a parent figure in the household (Demuth & Brown, 2004; Martinez & Forgatch, 2002; Patterson et al., 1998). Disruption in the family often can lead to increased hostility among adults in the household as well (Rutter, 1978; Wadsworth & McCord, 1979). Problematic family functioning created by family transitions has also been shown to increase the reliance of children on their peer group (Kirby, 2006). The peers they turn to often are ones who engage in illegal activities, thus increasing the probability that the child will engage in such behaviors (Krohn, Thornberry, Rivera, & LeBlanc, 2001; Warr, 2002). Disruptions in the family structure also have been shown to affect school performance and school commitment (Aquilino, 1996; Brown, 2006). As the life-course approach suggests, disruptions in the family may lead to disruptions throughout a young person's life.

The life-course approach to an examination of the impact of family transitions on the behavior of children recognizes that family transitions are not isolated events that occur at only one time in children's lives. In addition, it recognizes that what occurs in the family arena affects other important arenas in the lives of these children. Indeed, it appreciates the impact of the accumulation of adverse consequences that may be due to family transitions.

The approach taken in the current study is informed by the life-course approach in that it recognizes the importance of an accumulation of problems over time and the link across different domains in peoples' lives. However, a particular life-course theory is not examined, although a number have identified the importance of the issues on which this article is focused (e.g., Akers, 1998; Farrington, 2005; Hawkins & Weis, 1985; Moffitt, 1993; Sampson & Laub, 1993; Thornberry & Krohn, 2005). Specifically, the impact of family transitions on three arenas that are important in a young person's life: the family, the school, and peers are the focus of the current study. As indicated above, family transitions are expected to have adverse outcomes for youth in these arenas of their lives. Moreover, these three domains have been identified as risk or protective factors for adolescent delinquency and drug use. A brief review of the relationship among family, school, and peer factors and delinquent and drug using behavior outlines these ideas.

Family, School, Peers and Delinquent and Drug Using Behavior

With the possible exception of demographic variables such as race, class, and gender, family, school, and peers are the three most researched domains in the literature of adolescent delinquency and drug use. These three arenas play central roles in social learning theories (Akers, 1998), self-referent theories (Kaplan, 1986), general strain theories (Agnew, 2006), and in most life-course and integrated theories (Farrington, 2005; Thornberry & Krohn, 2005). A brief review of that literature is presented below.

There has been a substantial amount of research examining the relationship between family factors and both delinquency and drug use (for a review see; Simons, Simons, & Wallace, 2004). Research focusing on how family attachment, parental monitoring, and supervision are related to delinquency and drug use has generally shown that there is a significant, albeit, moderate relationship (Simons et al., 2004). More traumatic types of family relationships, such as family hostility, disciplinary practices, and even child maltreatment, tend to be stronger correlates of problematic outcomes for children (Straus, Gelles, & Steinmetz, 1980; Widom, 1989). Families that experience changes in their structure often are hostile environments for children and sometimes result in harsh discipline and even abusive

behaviors. In turn, an abusive family environment increases the risk of both delinquency and drug use among the children who are subjected to it.

Research has also demonstrated that children from single-parent families or disruptive family environments are more likely to get in trouble at school and to be less successful because they have less of a commitment to the school (Lawrence, 2007; Simons et al, 2004). Children who experience problems within the school setting and who are less committed to doing well in school are more likely to engage in delinquent behavior and to use drugs (Gottfredson, 2001; Lawrence, 2007). Therefore, it is expected that children who are raised in families that experience more structural transitions will also experience more problems in the school setting and, in turn, be more likely to engage in problematic behavior.

Although both family and school factors have been shown to be related to problematic behavior, the strongest and most consistent predictor of adolescent delinquency and drug use is adolescent relationships with delinquent peers (Akers, 1998; Akers & Sellers, 2007; Thornberry & Krohn, 1997; Warr, 2002). Youth who have more friends who engage in problematic behavior are more likely to engage in it themselves. In addition, youth who interact with their friends in settings that are not properly monitored and supervised will be more likely to engage in delinquency and drug use (Krohn & Thornberry, 1993). Krohn and Thornberry also found that changes in the friendship, such as hanging around with a different crowd or breaking up with a boy- or girlfriend, can lead to a higher probability of drug use. Family disruptions may impact who the adolescent's friends are, where they hang out, and in what kind of behaviors they engage.

Based on these theories and the previous research, it is anticipated that the number of family transitions will increase the probability of family, school, and peer problems. In turn, these problems are predicted to have a direct effect on delinquent and drug using outcomes and to mediate fully the relationship between family transitions and these outcomes.

Family Transitions and Gender

Despite the vast amount of research exploring the effects of family transitions on adolescent outcomes, few studies examine the possibility of gender differences. The literature reveals that boys respond more negatively to divorce and single-mother households than do girls (Hetherington, Stanley-Hagan, & Anderson, 1989), but gender differences are not found when general measures of transitions are used (see Fergusson, Horwood, & Lynskey, 1992; Keller et al., 2002; Ruschena et al., 2005). With the exception of the work by Fergusson and colleagues, these latter studies do not consider the relationship between the variables that are proposed to mediate the relationship between family transitions and the outcomes. It is hypothesized in the current study that the effect of transitions and family, school, and peer variables on delinquent outcomes will be stronger for boys than for girls for two reasons. First, boys are more likely than girls to externalize the anger they feel about the family being disrupted (Moffitt, Caspi, Rutter, & Silva, 2001). In addition, when a family transition takes place, the mother is more likely to remain with the children. Since mothers and daughters tend to have stronger bonds during the adolescent years than mothers and sons, the impact of family disruption may be less for girls than it is for boys.

Hypotheses

In sum, it is expected that changes in family structure will adversely impact the three most important arenas in the lives of adolescents: the family, school, and peers. Specifically, it is hypothesized that adolescents who live in families that experience more transitions will also experience lower levels of parental attachment and supervision, as well as less consistent discipline, more hostile family environments, more school-related problems, and poorer peer

interactions. In turn, the adverse effect of family transitions on these arenas are expected to increase the probability that adolescents will engage in delinquent and drug-using behavior. In other words, it is predicted that the effect of family transitions will be mediated by problems in the family, school, and peer arenas of adolescent life. Additionally, it is hypothesized that the effect of family transitions will be greater for boys than girls because of the gendered nature of family relationships and the tendency for boys to be more likely to externalize their dissatisfactions.

Methods

Data

Data from the Rochester Youth Development Study (RYDS), an ongoing longitudinal study investigating the causes and consequences of serious, violent, and chronic delinquency are used in the current study. The Rochester study has followed a panel of juveniles from their early teenage years through age 31, completing 14 interviews with the respondents. The study began in 1988, at which time 1,000 seventh and eighth grade students were sampled from public schools in Rochester, New York. Subjects and a primary caregiver (most often the biological mother) were interviewed every six months from the spring of 1988 until the spring of 1992. The present analysis only uses the adolescent data (Wave 2, Fall 1988 through Wave 9, Spring 1992) because they correspond to the period during which subjects were, on average, between the ages of 14 and 17. Subjects were most likely under the supervision of a parent or guardian and thus experiencing family transitions during this time.

In order to meet objectives of the current study, youth at high risk for serious delinquency and drug use were oversampled because the base rates for these behaviors are relatively low (Elliott, Huizinga, & Menard, 1989; Wolfgang, Thornberry, & Figlio, 1987). To do this, the sample was stratified on two dimensions. First, males were oversampled (75% versus 25%) because they are more likely than females to be chronic offenders and to engage in serious and violent delinquency (Blumstein, Cohen, Roth & Visher, 1986; Huizinga, Morse, & Elliott, 1992). Second, students from high-crime-rate areas of the city were over sampled based on the assumption that adolescents who live in such areas are at greater risk for offending than are those living in low-crime-rate areas. In order to identify these areas, each census tract in Rochester was assigned a resident arrest rate reflecting the proportion of the tract's total adult population arrested by the Rochester police in 1986.

The current analysis examines the effect of family transitions on delinquency and drug use. Further, the arenas of the adolescents' lives through which family transitions may impact these problematic behaviors are examined. In order to test the gender-related hypotheses that boys are more likely to externalize their negative feelings and engage in problem behaviors, separate equations are estimated for the 471 boys and 175 girls for whom data are available on all variables and all waves under consideration.

Missing Data

Data may be missing in the current study for a couple of reasons. First, listwise deletion was used. This means that if data are missing for a respondent on any one variable used in the analysis, data for all variables are considered missing and the respondent is eliminated from the analysis. For example, respondents who are not enrolled in school are missing from the analysis because they are not asked the questions that comprise the measure of school-related problems. Second, longitudinal studies experience attrition. Some subjects may be missing at some waves but return to the panel at others. Between Waves 2 and 10, the RYDS experienced only one percent attrition each year. These retention rates compare favorably to other panel studies of antisocial behavior, especially since high-risk youth were

oversampled. In a formal test of differential attrition, Krohn and Thornberry (1999) compared those retained and not retained at Wave 10 on gender, social class, family structure, early drug use, delinquency, property crime, and violent crime. This was done for the total panel and for each racial and ethnic group. None of the 28 significance tests attained statistical significance ($p<.05$). These findings indicate that the resulting panel is representative of the initial sample.

Measures

General delinquency and drug use—Table 1 summarizes the measures used in the current analysis. The dependent variables are based on adolescent reports of the frequency of involvement in delinquent behavior and drug use between, on average, the ages of 16 ½ and 17 ½ years old. The General Delinquency index includes 32 items measuring behaviors ranging from status offenses, vandalism, and minor property crimes to serious violent and property crimes. The Drug Use index measures respondents' use of 10 different substances ranging from marijuana to harder drugs like heroin and crack cocaine (see Appendix A for a list of items included in these indices). The dependent variables are logged because of the skewness toward high values.

Family transitions—The measure of family transitions is a continuous variable that measures the total number of transitions occurring among adolescents' primary caregiver(s) during the period in which adolescents are, on average, between the ages of 14 and 15 ½ years old. There are 18 categories of family structure based on respondents' reports of all persons living in the same household as the adolescent at the time of the interview (see Table 2). These data are collected from parent interviews unless adolescents did not live with the reporting parent or data are missing. In these cases, data on family structure are collected from the adolescent interviews. Categories are hierarchical in nature meaning that the adolescents' living situations cannot be reflected in any of the preceding categories, but may be reflected in subsequent categories. For example, respondents categorized as living with their biological mother and her partner may also live with a relative, but the living situation cannot be classified in categories 1, 2, or 3.

The number of transitions occurring between Waves 2 and 5 are counted based on changes in family structure from one wave to the next. Given that the goal is to capture changes in adolescents' primary caregiver(s), transitions to and from categories 14-17 are not counted because they reflect situations in which the adolescent lives independent of any caregivers. In cases where data on family structure are missing for only one wave (n=5), data from the previous wave are imputed and no transition was counted. If data are missing on more than one wave, the value for family transitions is considered missing. Table 3 displays the frequencies for the number of transitions occurring over the 1 ½ -year period between Waves 2 and 5. The number of transitions ranges from zero to three, with the majority of adolescents (approximately three-quarters) experiencing no changes in primary caregiver(s).

It is theorized that four types of problematic outcomes resulting from family transitions will mediate the relationships between transitions and the outcomes. These measures are observed at the period immediately following that during which transitions are counted (Wave 6) when adolescents are, on average, 16 years old. They also are measured when respondents are, on average, 14 years old (Wave 2), so that changes over time can be assessed. Rather than create a scale of the commonality of problematic outcomes, the goal for each of these was to create a measure of the number of things that go wrong, so prevalence scores for items in each measure are summed. These scales are not based on the average scores across measures, so reliability scores are not appropriate and are not calculated. Rather, they are simply the count of problematic outcomes. In some cases, these

scales are constructed by summing scores from other scales that do average the scores on each measure. Cronbach's alpha is reported in these cases. Reliabilities for all but two of the scales are quite high.

Family hostility—Family Hostility assesses problems that originate in the family. The construct is the sum of the prevalence scores of three measures: child maltreatment, hostile home environment, and harsh discipline. Child maltreatment indicates whether there is an official report of substantiated maltreatment of the adolescent on file with the Monroe County Department of Social Services. These incidents are limited to maltreatment that occurred before age 14 for the Wave 2 measure and before age 16 for the Wave 6 measure, as these are the average ages of adolescents at these waves. Hostile home environment is based on a 4-item index assessing the extent to which the parent reports a climate of hostility and conflict within the family (Wave 2, α=.58; Wave 6, α=.65). Item responses range from 1 to 4 and an average score within the upper quartile (2 or greater) across the 4 items is indicative of a hostile environment. Harsh discipline is a 3-item scale that measures the level of relatively severe disciplinary tactics taken by the adolescent's parent. The reliabilities for this scale at both waves are quite low indicating that when people use severe disciplinary tactics the specific tactics are quite different (Wave 2, α=.39; Wave 6, α=.36). Item responses range from 1 to 4 and an average score within the upper quartile (1.5 or greater) across the 3 items indicates the parent's use of harsh punishment.

Family interactions—The second mediating variable, Family Interactions, assesses the impact of positive relations between adolescents and their parent or primary caregiver. The measure is the sum of scores from parents' reports across three scales: the level of attachment the parent feels toward the adolescent (Wave 2, α=.80; Wave 6, α=.83), how consistent the parent feels he or she is in disciplining the adolescent (Wave 2, α=.75; Wave 6, α=.78), and the level of supervision the parent exercises over the adolescent (Wave 2, α=.70; Wave 6, α=.82). Item responses for the individual scales range 1 “never” to 4 “often” and on average, parents report positive relationships with their adolescents (see Table 1).

School-related problems—School-Related Problems assesses the adolescent's feelings and negative events related to school. It is the sum of the prevalence scores for three measures. Two single items from the interview ask about events that occurred since the last interview. The first asks whether the adolescent failed a course at school and the second asks if they had been suspended or expelled. Finally, a 10-item scale that assesses the adolescent's commitment to school is dichotomized so that an average score within the lower quartile (2.9 or less) across the items indicates low commitment to school (Wave 2, α=.78; Wave 6, α=.84). At both waves, the sum of these three dichotomous measures indicates that, on average, commitment is high.

Peer interactions—The peer group is the final aspect of the adolescents' lives that is expected to mediate the relationship between family transitions and delinquent behavior. Like the other measures, it is a sum of the prevalence scores for six variables related to peer influences. There are four dichotomous measures asking about relationships since the last interview. They ask whether the subject broke up with a boyfriend or girlfriend, got a new girlfriend or boyfriend, had a big fight or problem with a friend, or started hanging out with a new group of friends. A 3-item scale measures the amount of time spent with friends doing things that increase their risk of getting into trouble (responses range from 1 “never” to 5 “everyday”). Reliability scores for this scale are fairly high (Wave 2, α=.76; Wave 6, α=.80). Again, this scale is dichotomized so that an average score within the upper quartile (2.75 or greater) across the items indicates that a lot of risky time is being spent with friends. The last measure that comprises Peer Interactions is an adolescent report of how many of

their friends were involved in seven delinquent acts such as hitting or attacking someone, robbery and theft, or vandalism. A 4-point response scale ranging from “none of them” to “all of them” is used. Again, Cronbach's alpha is relatively high (Wave 2, α=.85; Wave 6, α=.85). An average score within the upper quartile (1.4 or greater) across the seven items indicates adolescent associations with delinquent peers.

Finally, there are two measures of prior deviant behavior: Prior General Delinquency and Prior Drug Use. These variables are constructed in the same way as the corresponding dependent variables.

Analysis

Ordinary least squares (OLS) regression models are used in reduced form analyses to test the hypotheses that changes and problems within family, school, and peer environments mediate the relationship between family transitions and delinquent outcomes among adolescents. This analytical technique has been used by other researchers interested in answering similar questions (see Crawford & Novak, 2008) and is appropriate for the current research given the causal nature of the proposed relationships. It allows for the analysis of both direct and indirect relationships between family transitions, the four mediating variables, and the delinquent outcomes.

The first step in this analysis is an evaluation of the direct relationships between family transitions that occurred when adolescents are, on average, between the ages of 14 and 15 ½ years old (Waves 2-5) and the adolescents' family, school and peer situations at the average age of 16 (Wave 6). This is done for both the general delinquency and drug use models. The next step is to estimate two models that assess the direct relationships between the number of family transitions and the incidence of general delinquency and drug use when the adolescents are, on average, 16 ½ - 17 ½ years old (Waves 7-9) . Finally, the direct relationship between the Wave 6 mediators and the delinquent outcomes is estimated. These equations include the Wave 2 measures, which controls for the initial levels of family, school, and peer problems and delinquency, when adolescents are, on average, 14 years old, but also allows for the examination of effects over time. Specifically, we can examine how the change in the levels of these interactions and problems between the average ages of 14 and 16 years old (Waves 2 and 6) influence the change in general delinquency and drug use between the average ages of 14 (Wave 2) and 16 ½ to 17 ½ (Waves 7-9). Taken together, the coefficients from the latter two OLS regression equations provide an assessment of both the direct effect of transitions on delinquent outcomes and the indirect effects of family transitions on these outcomes through the Wave 6 measures.

Results

The initial step in testing the hypotheses that changes and problems in adolescents' environments mediate the relationship between family transitions and delinquent outcomes is to analyze the effect of family transitions on the mediating variables. Tables 4a and 4b illustrate the results of OLS regression models predicting the mediating variables at Wave 6 for the general delinquency and drug use models. Controlling for the appropriate Wave 2 measures, there are statistically significant positive relationships between the number of family transitions and peer interactions for boys in both the general delinquency and drug use models. There are no statistically significant relationships between the number of family transitions and the mediating variables for family hostility, family interactions, or school-related problems for boys and there are no significant relationships for girls at all. These findings indicate that boys who are subjected to more family transitions experience a greater number of problems with peer interactions.

It is interesting to note that there is stability in the four measures between Waves 2 and 6 for boys and girls in both models. For example, there is strong statistically significant stability in family hostility between Waves 2 and 6. This stability is strongest for the family variables. It is not as strong, but is still statistically significant, for school-related problems and peer interactions.

These four measures tend not to act as a constellation of events. In other words, they do not tend to predict each other over time; however, there are a few exceptions. School-related problems at Wave 2 predict problematic peer interactions at Wave 6 for boys in the general delinquency model. In the drug use model, family interactions at Wave 2 predict family hostility at Wave 6 and school-related problems predict peer interactions among boys. Among girls, school-related problems negatively impact family interactions in the drug use model.

Table 5 illustrates the results from reduced form OLS equations for the model predicting the incidence of general delinquency between Waves 7 and 9. Equation 1 is simply the coefficient for the zero-order correlation between family transitions and general delinquency. Boys who experience more family transitions between the average ages of 14 and 15 ½ years old (Waves 2-5) engage in more delinquency when they are, on average, 16 ½-17 ½ years old (Waves 7-9). There is no relationship between family transitions and delinquency for girls. Equation 2 introduces the Wave 2 measures of family hostility, family interactions, school-related problems, peer interactions, and prior general delinquency. Net of these variables, the number of family transitions still has a statistically significant influence on delinquency for boys. The initial levels of the Wave 2 controls have no influence on delinquency, but there is a statistically significant lagged effect of general delinquency. Adolescents who engage in higher levels of delinquency at age 14 (Wave 2) are more likely to engage in delinquency between the average ages of 16 ½ and 17 ½ (Waves 7-9).

Building on the first two equations, Equation 3 includes the four measures as mediating variables at Wave 6. Results show that the main effect of family transitions is reduced again, but remains statistically significant for boys. This indicates that there is a direct impact of family transitions on general delinquency for boys. Two Wave 6 variables partially mediate its effect on general delinquency. First, the increase in problems with peers between Waves 2 and 6 encourages higher levels of delinquency over time among boys. Coupled with the results from Table 4a, these findings indicate that there is also a statistically significant indirect effect of family transitions through changes in peer interactions at Wave 6. Adolescent boys who experience a greater number of family transitions experience significantly higher levels of problematic peer interactions over time, which in turn leads to increases in general delinquency over time. There is also a statistically significant effect of school-related problems on general delinquency, but there is no indirect effect of family transitions through it on general delinquency. For girls, there is a statistically significant direct effect of peer interactions, but this variable does not mediate the relationship between family transitions and delinquency. Overall, there is some support for the theory, for boys but not girls, that the stressful life changes that follow family transitions ultimately impact levels of delinquency.

The results for the models predicting drug use again show only an effect of family transitions among boys (see Table 6). This statistically significant effect holds across all three equations. This indicates that the impact of family transitions is independent of both the initial levels of family hostility, family interactions, school-related problems, peer interactions, and prior drug use, as well as the change in these measures over time. There are main effects of family interactions and school-related problems on drug use for boys, as seen

in Equation 2; however, these effects disappear with the introduction of the mediating variables in Equation 3. This finding, coupled with the statistically significant effect size of these mediators at Wave 6, indicates that it is the increase over time, rather than the initial level of family interactions and school-related problems, that elevates drug use between the ages of 14 and 16 ½ to 17 ½ for boys. However, there is no indirect effect of family transitions through these variables. Rather, as is the case for general delinquency, there is an effect of peer interactions on drug use for boys. Since Table 4b shows an impact of family transitions on Wave 6 peer interactions, there is an indirect effect of family transitions on drug use through changes in peer interactions for boys. These findings support the hypothesis that family transitions promote substance use among adolescent boys both directly and by fostering problematic peer interactions. Family interactions, school-related problems, and peer interactions all significantly impact drug use for girls. However, there are no indirect effects of family transitions through these measures, and it is their level, rather than changes in them, that produces the drug use.

Discussion

The current study built upon previous research that indicates both direct and indirect links between family transitions and delinquent outcomes (Demuth & Brown, 2004; Juby & Farrington, 2001). The concept of linked lives, a theoretical model within the life-course perspective, is used to inform the hypotheses presented. It recognizes that family, school, and peer contexts, among others, are interrelated so that disruptions in any one arena influence not only that arena, but others in an adolescent's life (Thornberry & Krohn, 2005) Specifically, it was hypothesized that the deleterious effect of family transitions on adolescent outcomes would be mediated in part by family, school, and peer problems that follow such transitions. In particular, it was expected that adolescents who underwent more transitions in family structure would show heightened levels of family, school, and peer problems and in turn, engage in more delinquency and drug use than adolescents experiencing fewer transitions. It was further hypothesized that the impact of family transitions on both the mediating variables and the behavioral outcome variables would be greater for boys than girls because of both the tendency for boys to externalize their anger and the closeness of the relationship between girls and their mothers (the parent that is most likely to remain with the adolescents).

Whereas the models for girls show no influence of family transitions and some direct relationships between the Wave 6 mediators and the later outcomes, the results for adolescent boys offer some support for the hypotheses. This finding may be a reflection of boys being more likely to externalize their reactions, as Moffitt et al (2001) found. Results show both a statistically significant direct effect of family transitions on general delinquency and an indirect effect through peer interactions. Adolescent boys who experience more family transitions tend to experience more changes in problematic peer interactions and in turn, are more likely to engage in higher levels of delinquency over time. The findings are similar for the models predicting drug use except that some of the Wave 6 variables have direct effects on delinquent outcomes for both boys and girls, but do not mediate the effects of family transitions. The effect of family transitions is mediated only partially by an increase in changes in problematic peer interactions for adolescent boys, as the direct effect of family transitions remains statistically significant even after the introduction of the mediating variables. This remaining direct effect suggests that other variables may mediate the impact of family transitions on delinquency. Adolescent boys who experience more changes in family structure over the one-and-a-half-year period are more likely to increase their use of drugs over time as both a direct result of these changes and indirectly when these transitions shape their interactions with peers.

These findings are similar to those found in previous research in that the effect of family transitions is conditioned by the influence of intervening variables (for example see Amato, 2000; Aquilino, 1996; Fergusson et al., 1992). The current study builds on these findings by examining family, school, and peer processes that extend beyond the more obvious effects of changes in family structure, such as loss of economic resources (see Ram & Hou, 2003) . In particular, it was found that adolescent boys who experience more family transitions engage in more delinquency and drug use, and that these effects are partially mediated by problems and changes occurring within their personal lives. Adolescents who experience an increase in school problems (boys only) and negative peer influences (both boys and girls) over time are also involved in more delinquency. Additionally, family and school problems, and peer interactions (both boys and girls) lead to increased drug use over time. However, the effect of family transitions on the delinquent outcomes was influenced only by problems with peers for boys, offering the only indirect effect of family transitions on the outcomes.

Despite the differences between boys and girls that are evident in these models, a comparison of the coefficients (results not shown) indicates no statistically significant differences between these two groups. It cannot be concluded with any confidence that the effects are different for boys and girls; therefore, there is no support for the hypothesis of gender differences. Even though a new conceptual approach was taken in this study and gender differences were anticipated, this null finding supports those of previous research (Keller et al., 2002; Ruschena et al., 2005).

While one pathway between family transitions and the delinquent outcomes (through peer interactions) was supported for boys, the hypothesized relationships involving family and school problems were not. This may be explained by the measures used in the study. A global measure of family transitions, which suggests that any change in the family structure would result in family and individual problems, was used in this study. The type of change that took place (adding or subtracting a parent or adult figure) was not assessed. It was demonstrated, however, that regardless of the type of family transition, boys are likely to react negatively toward change in the family by changing their own social network and/or having problems in school. In turn, these changes lead to the type of externalizing behaviors manifested by delinquency and drug use.

These findings raise a number of interesting questions. Clearly, the current research begs the question of what transitions cause which reactions. An attempt to examine this was made, but meaningful results were not possible because the number of transition types (n=14) precluded statistically meaningful comparisons. Studies with similar data, but larger sample sizes, need to delve into the differences among types of transitions.

Another limitation of the current research is that only transitions during the adolescent years were examined. There is some suggestion that family transitions at different developmental stages may have different effects on children and adolescents (Hetherington, Bridges, & Insabella, 1998; Pagini, Tremblay, Vitaro, Kerr, & McDuff, 1998). The RYDS is currently collecting data on the children (starting at age 2) of the original target sample. These data will allow the examination of this issue.

It would also be interesting to examine the longer-term outcomes of family transitions. Expanding the period and looking at adult outcomes would not only address this issue, but also those raised by the trauma approach. Regardless of the immediate reactions of children to family transitions, the traumatic effect of such changes manifest itself later on in the life course.

It is evident that multiple family transitions have a problematic impact on the lives of adolescent boys in these families. The current study finds that adolescents living in families

that experience more transitions are likely to commit more delinquent acts and use drugs more often than adolescents living in families that experience fewer transitions. Family transitions negatively impact the personal environments of these adolescent boys, the accumulation of which is particularly important in explaining the adverse effects of family transitions on delinquent and drug-using behavior. The impact of transitions on family, school, and peer environments does not explain the relationship between family transitions and delinquent outcomes for the adolescent girls in this study.

The results of the current study support those of previous research (e.g., Haas et al., 2004; Ram & Hou, 2003) by clearly illustrating the need to take into consideration the stability of the family when explaining delinquency and drug use. It is necessary to go beyond sole considerations of family structure by addressing stability within families, as many American families, and most of the families in the current study, are not traditional two-parent families. Rather, there are many single-parent families, and families that have experienced some type of disruption. Families may even experience multiple transitions within a short period, as did many in the current study. The impact of changing family structures on problematic behavior must be recognized, and steps to help children and adolescents deal with the resulting stress need to be taken.

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Appendix A

Since we interviewed you last time, have you …

General Delinquency

1. Run away from home?
2. Skipped classes without an excuse?
3. Lied about your age to get into some place or to buy something? (for example, lying about your age to get into a movie or buy alcohol)
4. Hitchhiked a ride with a stranger?
5. Carried a hidden weapon?
6. Been loud or rowdy in a public place where someone complained and you got in trouble?
7. Begged for money or things from strangers?
8. Been drunk in a public place?
9. Damaged, destroyed, marked up, or tagged somebody else's property on purpose?
10. Set fire on purpose or tried to set fire to a house, building, or car?
11. Avoided paying for things, like a movie, taking bus rides, using a computer, or anything else?
12. Gone into or tried to go into a building to steal or damage something?

13. Tried to steal or actually stolen money or things worth $5 or less?
14. Tried to steal or actually stolen money or things worth $5-$50?
15. Tried to steal or actually stolen money or things worth between $50-$100?
16. Tried to steal or actually stolen money or things worth more than $100?
17. Tried to buy or sell things that were stolen?
18. Taken someone else's car or motorcycle for a ride without the owner's permission?
19. Stolen or tried to steal a car or other motor vehicle?
20. Forged a check or used fake money to pay for something?
21. Used or tried to use a credit card, bank card, or automatic teller card without permission?
22. Tried to cheat someone by selling them something that was not what you said it was or that was worthless?
23. Attacked someone with a weapon or with the idea of seriously hurting or killing them?
24. Hit someone with the idea of hurting them?
25. Been involved in gang or posse fights?
26. Thrown objects such as rocks or bottles at people?
27. Used a weapon or force to make someone give you money or things?
28. Made obscene phone calls?
29. Been paid for having sexual relations with someone?
30. Physically hurt or threatened to hurt someone to get them to have sex with you?
31. Sold marijuana, reefer or pot?
32. Sold hard drugs such as crack, heroin, cocaine, LSD or acid?

Drug Use

1. Used marijuana, reefer or pot?
2. Inhaled things, other than cigarettes, like glue to get high?
3. Tried LSD, acid, or cubes?
4. Tried cocaine, coke or snow, other than crack?
5. Tried crack?
6. Tried heroin or smack?
7. Tried angel dust or PCP?
8. Tried tranquilizers, ludes or valium?
9. Tried downers, yellow jackets or red or blue devils?
10. Tried uppers, speed, bennies or black beauties?

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Table 1

Descriptive Statistics for Variables Used in Analysis

		Mean		Standard Deviation		Range	
Variable Name	**Source**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**
Dependent Variables							
General Delinquency (Waves 7-9)	Adolescent	1.55	1.15	1.89	1.85	0-6.77	0-6.14
Drug Use (Waves 7-9)	Adolescent	.80	.56	1.55	1.19	0-6	0-5.20
Family Transitions (Waves 2-5)	Parent & Adolescent	.32	.34	.67	.70	0-43	0-3
Control Variables (Wave 2)							
Family Hostility	Parent,Adolescent &Social Services	.40	.47	.58	.64	0-2	0-2
Family Interactions	Parent & Adolescent	10.18	10.23	.92	.92	6.49-12	7.45-12
School-Related Problems	Adolescent	.87	.86	.89	.83	0-3	0-3
Peer Interactions	Adolescent	1.91	2.09	1.44	1.45	0-6	0-6
Prior Delinquency (Logged)	Adolescent	.93	.88	1.24	1.28	0-5.48	0-4.99
Prior Drug Use (Logged)	Adolescent	.15	.20	.60	.65	0-4.95	0-3.43
Mediating Variables (Wave 6)							
Family Hostility	Parent, Adolescent & Social Services	.33	.40	.56	.60	0-2	0-2
Family Interactions	Parent & Adolescent 1	0.11	10.31	.88	.93	7.05-11.71	7.17-11.83
School-Related Problems	Adolescent	.94	.72	.87	.79	0-3	0-3
Peer Interactions	Adolescent	1.75	1.57	1.49	1.49	0-6	0-6

Table 2

Family Structure Categories

Category	Description
1	Both biological parents
2	Biological mother only
3	Biological father only
4	Biological mother and her partner
5	Biological father and his partner
6	Biological mother and a relative
7	Biological father and a relative
8	Adoptive parent
9	Step parent
10	G1 generation relative(s) (e.g., aunt, uncle)
11	Foster parent(s)
12	Other adult
13	Institution
14	G2 generation relative(s) (e.g., sister, brother, cousin)
15	Lives on own, no parental figure
16	Lives with partner, no parental figure
17	Lives with a friend, no parental figure
18	Other living situation

Table 3
Number of Family Transitions, Waves 2-5

	Boys (n=471)		Girls (n=175)	
Number of Transitions	**Frequency**	**%**	**Frequency**	**%**
0	366	77.7	135	77.1
1	62	13.2	23	13.2
2	38	8.1	14	8.0
3	5	1.0	3	1.7

Table 4

4a Equations Predicting Wave 6 Mediating Variables in General Delinquency Models (Unstandardized Coefficients in Parentheses)

	Family Hostility		Family Interactions		School-Related Problems		Peer Interactions	
	Boys (n=471)	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**
Number of Family Transitions	.01 (.01)	−.08 (−.07)	.02 (.02)	.12 (.16)	.00 (.01)	−.03 (−.03)	.11* (.24)	−.04 (−.09)
Wave 2 Controls								
Family Hostility	.63** (.61)	.62** (.58)	−.03 (−.05)	.02 (.03)	−.01 (−.01)	−.07 (−.09)	−.04 (−.09)	−.01 (−.02)
Family Interactions	−.08 (−.05)	−.05 (−.03)	.57** (.54)	.50** (.51)	−.07 (−.07)	−.13 (−.11)	−.08 (−.13)	.03 (.04)
School-Related Problems	.05 (.03)	.11 (.08)	.03 (.03)	−.11 (−.12)	.29** (.28)	.31** (.29)	.11* (.19)	.10 (.17)
Peer Interactions	−.04 (−.02)	.03 (.01)	.02 (.01)	.01 (.01)	−.02 (−.01)	.02 (.01)	.17** (.17)	.20* (.21)
Prior Delinquency (Logged)	.02 (.01)	.00 (.00)	−.08 (−.06)	−.17* (−.13)	.13* (.09)	−.06 (−.04)	.13* (.16)	.12 (.14)
R^2	.44**	.44**	.34**	.34**	.14**	.11**	.13**	.10**

p < .05; ** p < .01

Table 4b Equations Predicting Wave 6 Mediating Variables in Drug Use Models (Unstandardized Coefficients in Parentheses)

	Family Hostility		Family Interactions		School-Related Problems		Peer Interactions	
	Boys (n=471)	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**
Number of Family Transitions	.01 (.01)	−.08 (−.07)	.01 (.01)	.11 (.15)	.02 (.03)	−.03 (−.04)	.13** (.28)	−.03 (−.07)
Wave 2 Controls								
Family Hostility	.63** (.61)	.63** (.58)	−.03 (−.05)	.01 (.02)	−.08 (−.07)	−.13 (−.11)	−.09* (−.15)	.02 (.04)
Family Interactions	−.08* (−.05)	−.04 (−.03)	.58** (.55)	.51** (.52)	−.01 (−.01)	−.08 (−.09)	−.03 (−.08)	.00 (.01)
School-Related Problems	.05 (.03)	.09 (.07)	.01 (.01)	−.15* (−.16)	.31** (.30)	.30** (.29)	.15** (.25)	.12 (.22)
Peer Interactions	−.04 (−.02)	.02 (.01)	−.01 (.00)	−.06 (−.04)	.02 (.01)	.00 (.00)	.21** (.22)	.25** (.26)
Prior Drug Use (Logged)	.00 (.00)	.06 (.05)	.01 (.01)	.01 (.02)	.03 (.04)	−.01 (−.02)	−.02 (−.04)	−.01 (−.01)
R^2	.44**	.45**	.34**	.32**	.13**	.11**	.12**	.09*

p < .05;

** p < .01

Table 5

Equations Predicting Incidence of General Delinquency, Waves 7-9 (Logged) (Unstandardized Coefficients in Parentheses)

	Equation 1		Equation 2		Equation 3	
	Boys (n=471)	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**
Number of Family Transtions (W 2-5)	.16** (.45)	.10 (.27)	.11* (.30)	.06 (.16)	.08* (.24)	.08 (.21)
Wave 2 Controls						
Family Hostility			.02 (.06)	−.01 (−.03)	.06 (.20)	−.05 (−.15)
Family Interactions			−.09 (−.18)	−.07 (−.14)	−.02 (−.04)	−.07 (−.13)
School-Related Problems			.02 (.05)	.14 (.31)	−.03 (−.07)	.08 (.18)
Peer Interactions			.05 (.06)	−.08 (−.10)	.01 (.02)	−.14 (−.18)
Prior Delinquency (Logged)			.24** (.36)	.19* (.28)	.19** (.28)	.16 (.23)
Wave 6 Mediators						
Family Hostility					−.06 (−.19)	.08 (.25)
Family Interactions					−.08 (−.17)	.00 (.00)
School-Related Problems					.11* (.25)	.06 (.14)
Peer Interactions					.23**(i)(.29)	.30** (.37)
R^2			.12**	.08*	.19**	.17**

*p < .05;

**p < .01

(i)Mediates the effect of family transitions

Table 6

Equations Predicting Incidence of Drug Use, Waves 7-9 (Logged) (Unstandardized Coefficients in Parentheses)

	Equation 1		Equation 2		Equation 3	
	Boys (n=471)	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**	**Boys (n=471)**	**Girls (n=175)**
Number of Family Transitions (W 2-5)	.15** (.35)	.09 (.15)	.12** (.29)	.04 (.07)	.10* (.23)	.08 (.14)
Wave 2 Controls						
Family Hostility			−.05 (−.13)	.04 (.08)	−.04 (−.11)	.05 (.09)
Family Interactions			−.11* (−.19)	−.02 (−.03)	.00 (.00)	.11 (.15)
School-Related Problems			.16** (.27)	.15 (.21)	.08 (.13)	.02 (.03)
Peer Interactions			.07 (.08)	.06 (.05)	.03 (.03)	−.02 (−.02)
Prior Drug Use (Logged)			.16** (.42)	.10 (.18)	.16** (.42)	.11 (.19)
Wave 6 Mediators						
Family Hostility					−.01 (−.04)	.02 (.05)
Family Interactions					−.15** (−.27)	−.22** (−.28)
School-Related Problems					.18** (.32)	.20** (.30)
Peer Interactions					.17**(i) (.18)	.28** (.23)
R^2			.12**	.07	.21**	.24**

*p < .05;

**p < .01

(i)Mediates the effect of family transitions