Article

Adolescent Delinquency and Family Conflict as Precursors of Romantic Relationships in Early Adulthood

**Veroni I. Eichelsheim[1], Arjan Blokland[1,2],
Wim H. J. Meeus[3,4], and Susan J. T. Branje[3]**

Abstract
Relationship engagement is an important life-course transition that may affect criminal development. Yet, little is known about how criminal behavior may in turn affect life-course transitions. Using six waves of data on adolescents, their parents and a sibling from the RADAR-Y (Research on Adolescent Development and Relationships, younger cohort) study, we investigate how patterns of adolescent delinquency and family conflict are related to characteristics of early adulthood romantic relationship engagement by means of a multiple-group trajectory model approach. We find that family conflict seems to foreshadow strained romantic relationships in the early adult years. Adolescent delinquency—and not family conflict—is the stronger predictor of partnering an antisocial spouse. Thus, persistence in antisocial behavior in adulthood may be contributed to both the nature of adolescent family relations and the extent of adolescent delinquency.

[1]Netherlands Institute for the Study of Crime and Law Enforcement (NSCR), Amsterdam, The Netherlands
[2]Leiden University, The Netherlands
[3]Utrecht University, The Netherlands
[4]Tilburg University, The Netherlands

Corresponding Author:
Veroni I. Eichelsheim, Netherlands Institute for the Study of Crime and Law Enforcement, PO Box 71304, 1008 BH Amsterdam, The Netherlands.
Email: veichelsheim@nscr.nl

Keywords

adolescence, criminal behavior, family conflict, early adulthood, romantic relationships

Engagement in romantic relationships is an important developmental task in early adulthood. By the time young people reach early adulthood, engaging in romantic relationships becomes increasingly normative and is taken to signal that adolescent developmental goals such as autonomy, individuation, identity formation, and sexual identity formation have been successfully met (Collins & Steinberg, 2006; Laursen & Bukowski, 1997; van de Bongardt, Yu, Deković, & Meeus, 2015). Moreover, engagement in romantic relationships has been associated with desistance from delinquency (Rhule-Louie & McMahon, 2007; Simons & Barr, 2014). Whereas research focusing on the consequences of (early) engagement in romantic relationships remains of importance, there has been growing interest into predicting early adulthood romantic relationship engagement and quality.

Romantic Relationship Quality and Antisocial Behavior Explained by Earlier Relationship Experience

Research has shown that warm relationships with parents and peers during childhood and adolescence are predictive of healthy and satisfactory relationships with intimate partners later in life (Conger, Cui, Bryant, & Elder, 2000; Meeus, 2016; Seiffge-Krenke, Overbeek, & Vermulst, 2010). Other studies report that parental relationship status (i.e., whether parents in the family of origin are divorced or not) is an important indicator for adult relationship quality and relationship satisfaction (see, for example, Amato & Booth, 2001; Seiffge-Krenke, Shulman, & Kiessinger, 2001). These findings are often interpreted in the light of the social learning perspective. In well-functioning families, children may learn prosocial behavior from the interactions with parents and siblings and bring this knowledge to relationships outside the family, first with peers and, later in life, with romantic partners (see, for example, Dunn, 2015; Laursen & Bukowski, 1997). In more problematic families, where parents lack adequate supervision skills, negative parental role models and aggressive and conflictive interactions between siblings may serve as a starting point for aggressive interactions with others later in life.

There is a large body of empirical evidence supporting that both relationship attitudes as well as later relationship quality are negatively influenced by growing up in families with marital conflict and divorce (see, for example,

Conger et al., 2000; Cui & Fincham, 2010). Not only has the quality of family relationships been linked to problematic interactions with others outside the family, but also been linked to prosocial and antisocial adjustment in childhood or later in life: Associations have been found with aggressive and delinquent or criminal behavior (see, for example, Collins & Steinberg, 2006; Dirks, Persram, Recchia, & Howe, 2015; Kim, Hetherington, & Reiss, 1999).

Romantic Relationships and Their Association With Criminal Behavior

In life-course criminological research, an individual's engagement in romantic relationships is considered an important transition that may affect one's criminal development (Craig, Diamond, & Piquero, 2014). Less well studied is, however, how engagement in criminal or antisocial behavior may affect important life-course transitions such as engagement in romantic relationships, marriage, or becoming a parent. Although some studies suggest that criminal behavior is linked to increased popularity and attractiveness as a potential partner (Crockett, Bingham, Chopak, & Vicary, 1996; Huizinga, Loeber, & Thornberry, 1993; Rodkin, Farmer, Pearl, & Van Acker, 2000), there is also research showing that the quality of these relationships may leave much to be desired. For example, children with conduct problems may be at risk of maladjustment later in life, including engagement in adverse partner relationships (Fergusson, John Horwood, & Ridder, 2005). Similarly, Raudino, Woodward, Fergusson, and Horwood (2012) found that higher levels of childhood conduct disorder were associated with more partner relationship difficulties in adulthood. Individuals in early onset and persistent offending trajectories may later experience problems with engagement in romantic relationships, next to a variety of other adjustment problems in adulthood (Rhule-Louie & McMahon, 2007). This conclusion is corroborated with recent findings from the Rochester Youth Development Study (Thornberry, Krohn, Augustyn, Buchanan, & Greenman, 2016) indicating that mainly early adolescent involvement in delinquency, drug use, and sexual behavior at an early age reduces the likelihood of both cohabitation and marriage, especially for males. There is also evidence that criminal behavior reduces an individual's chance of getting married (van Schellen, Poortman, & Nieuwbeerta, 2011) and affects the timing of parenthood (Huschek & Blokland, 2016).

In addition, criminal behavior does not only seem to affect the chances of becoming romantically involved, it also seems to affect the choice of a potential partner and the quality of the relationship (e.g., Krueger, Moffitt, Caspi, Bleske, & Silva, 1998; Rhule-Louie & McMahon, 2007). Research is

inconclusive on *why* delinquent or criminal behavior would be related to (later) partner relationship quality. Giordano, Lonardo, Manning, and Longmore (2010) suggested that both criminal behavior and conflictive relationships with romantic partners originate from negative social experiences in childhood and adolescence. These negative social experiences provide a violent-prone socialization environment for children, through which they may internalize norms about conflict-resolution strategies and the use of violence or aggression. This, in turn, would explain their delinquent behavior as well as conflictive social relationships with partners and peers during adolescence and adulthood. It has been suggested that delinquent adolescents may—also later in life—surround themselves with individuals who resemble them and may, therefore, be surrounded with antisocial or conflict-prone peers and romantic partners (Haynie, Giordano, Manning, & Longmore, 2005). This is in line with theoretical assumptions concerning assortative mating, suggesting that antisocial individuals actively select antisocial partners, which implies that similarity regarding antisocial behavior among partners already exists before partners get together (Boutwell, Beaver, & Barnes, 2012). Taken together, literature seems to suggest that although criminal behavior in adolescence may be associated with increased popularity and attractiveness, it is also associated with reduced chances of ending up in a stable and good quality romantic relationship in adulthood, and increases the chance to partnering an antisocial spouse.

Literature furthermore seems to suggest that timing and developmental patterns of *pubertal maturation* are associated with family relationship quality, timing of involvement in romantic relationships (e.g., Reese, Trinh, & Halpern, 2017), and antisocial behavior. Negativity in family relationships, such as conflict or harsh disciplining strategies by parents, seems to be related to earlier pubertal maturation (Belsky et al., 2007; Ellis, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). The link between romantic relationship involvement, the onset of sexual activity, and delinquency, may also—at least in part—result from biological processes, as the literature suggests that all are positively affected by pubertal maturation levels, for example, early menarche (Beaver & Wright, 2005; Collins, 2003; Felson & Haynie, 2002; Haynie et al., 2005; Moffitt & Caspi, 2001). The largest body of empirical work on pubertal timing focuses on the potential adverse effects of early onset of puberty. These studies reflect the ideas of the *developmental readiness hypothesis* and suggest that early pubertal maturation serves as a risk factor for antisocial behavior or mental health problems (e.g., Dimler & Natsuaki, 2015), because children that mature early will have little time to acquire the coping skills to deal with the stressful pubertal transition (Marceau, Ram, Houts, Grimm, & Susman, 2011; Negriff & Susman, 2011). According to

these studies, children that mature later are expected to have better behavioral outcomes. On the contrary, there is also a body of literature suggesting that *late onset* puberty may put adolescents *at risk* of developing problem behavior (see, for example, Harden & Mendle, 2012). Both may be true when considering the *maturational deviance hypothesis* stating that any deviant timing of puberty as compared with other adolescents may cause distress, which in turn may be associated with developmental problems and deviant behavior (e.g., Negriff & Susman, 2011).

Theoretical Perspectives

Associations between relationship quality in adolescence and romantic relationships outcomes in adulthood can best be viewed in the light of socialization theories, social learning perspective and the life-course perspective. Social learning theorists argue that through social or observational learning, children and adolescents obtain a basis for future relationship engagements that can be either positive or negative (e.g., Conger et al., 2000). Social learning theory states that individuals may acquire either pro- or antisocial behavior, but also attitudes and beliefs through reinforcement and observational learning (Bandura, 1977; Patterson, 1984; Whiteman, McHale, & Soli, 2011). Within families, parents are crucial in socialization of their children. They may serve as role models by setting social examples, but may also play an important role in reinforcing social interaction and conflict resolution styles among their children. Not surprisingly, families are considered to be the most important socialization environment for children and adolescents. There is a large body of literature indeed suggesting that especially in the early developmental stages children may observe the relational behavior of their parents, and subsequently these experiences are assumed to form the basis for relationships with siblings and peers (Conger et al., 2000; Cui & Fincham, 2010; De Goede, Branje, van Duin, VanderValk, & Meeus, 2012). Later in life, these experiences provide a basis for the quality of relationships with intimate partners (e.g., Staats, van der Valk, Meeus, & Branje, 2017), and (mal) functioning in a variety of other life domains (see, for example, Collins & Steinberg, 2006; Dirks et al., 2015; Kim et al., 1999).

Life-course theory stresses the continuities—and discontinuities—between different developmental stages over the life-course and across different life-course domains (Elder, 1998). In general, life-course theory assumes that developments in different life-course domains are complexly intertwined and may reciprocally influence each other (Elder, 1998; McLeod & Almazan, 2003). Laub and Sampson (1993), Sampson and Laub (1990; 2003) adopted the life-course perspective to study individual (dis)

continuities in antisocial behavior over the life span. Theirs and others' research shows that transitions in the life-course, such as marriage, divorce, or becoming a parent, are likely to have an effect on the criminal development of individuals (Blokland & Nieuwbeerta, 2010). Far less research attention has been paid to the extent to which criminal behavior may likewise affect these life-course transitions, such as the ability to engage in healthy romantic relationships (Huschek & Blokland, 2016). From a life-course perspective, however, continuity of criminal or antisocial behavior of individuals over the life-course is more likely when different life-domains (e.g., family conflict and delinquency) negatively reinforce each other (Thornberry, 2014; Thornberry et al., 2016).

Current Study

The "marriage effect" on desistance from crime is very well established (see Craig et al., 2014). However, the effects of criminal—or antisocial behavior on life-course transitions such as marriage and relationship quality have hardly been scrutinized in criminology. The aim of the current study is to investigate whether overtime patterns of adolescent delinquent behavior and relationship quality with parents and siblings, together with patterns of pubertal maturation, are related to characteristics of early adulthood romantic relationship engagement. Instead of considering developments in each of these domains in isolation, we take a more holistic, person-orientated approach and simultaneously consider developmental patterns in each of these domains. We use a multiple-group trajectory model approach (Jones & Nagin, 2007) to assign individuals to developmental trajectories that are characterized by developments in individuals' relational conflict with parents and siblings, pubertal maturation patterns as well as their antisocial behavior during adolescence.

In his *five-feature framework*, Collins (2003) identified five important features of adolescent and early adulthood romantic relationships: *involvement* (i.e., whether or not individuals have a romantic partner), *partner selection* (i.e., the characteristics of the partner), *relationship content* (i.e., shared activities), *relationship quality* (i.e., either supportive and affectionate, or characterized by conflict), and *cognitive and emotional processes* (i.e., social goals, attributions, relationship representations). In the current study, we incorporate this framework and specifically examine whether and how trajectory group assignment is related to respondents' engagement in romantic relationships in early adulthood (*relationship involvement*), antisocial behavior of the partner (*partner selection*), their time spent together (*relationship content*), and relational conflict between partners (*relationship quality*).

Cognitive and emotional processes in the relationship—the fifth feature described by Collins (2003)—require a certain level of maturation of the relationship, and given that—due to the relatively young age of the current sample—most respondents in our study are not yet living together, we do not address this feature here.

Formulating concrete hypotheses on group classifications and their subsequent association with adult partner relationship characteristics is difficult. Based on the literature about the associations between pubertal timing, delinquency, and family relationships, we expect that individuals in trajectories characterized by either early or late pubertal maturation may have higher chances of being involved in delinquent activities and may show more conflictive family relationship patterns. Furthermore, based on theory and literature, we would expect that individuals in trajectories characterized by high levels of conflict with parents and siblings, may have higher chances to end up in conflictive partner relationships in early adulthood (see, for example, Conger et al., 2000; Kim, Conger, Lorenz, & Elder, 2001). Similarly, based on the literature, it could be expected that individuals in trajectories characterized by high levels of delinquency are not only at risk of continuation of antisocial behavior, but also of finding a antisocial partner (e.g., Boutwell et al., 2012; Rhule-Louie & McMahon, 2007) and may also experience more troubled relationships with that partner (e.g., Fergusson et al., 2005; Giordano et al., 2010; Raudino et al., 2012).

Moreover, based on the framework proposed by Collins (2003), we would expect that background variables may also have an effect on the features of early adulthood romantic relationships. Among them are socioeconomic status (SES; Collins, 2003), whether respondents already had romantic relationship experience (Boisvert & Poulin, 2016), and whether they experienced the divorce of parents in the family of origin (Amato & Booth, 2001; Cui & Fincham, 2010).

The current study contributes to the literature in several important ways. First, we combine two important perspectives on adult relationship formation: social learning and life-course theory. Second, rather than using retrospective data on relationship quality or antisocial behavior, the current study includes prospective and longitudinal data from the period of adolescence onward. As many relational and behavioral changes take place during adolescence, the use of longitudinal data is of importance to capture adolescent development. Third, we also account for the associated development of relationship quality and the development of delinquent behavior during adolescence. Although developmental links between life-course domains such as family relationship quality and adolescent delinquency are well established (e.g., Buist et al., 2015; Dekovic, Buist, & Reitz, 2004), these developmental

linkages have—as far as we know—never been used to simultaneously predict engagement in, selection of, the characteristics of adult romantic relationships. Fourth, by focusing on relationship engagement as an outcome, we extend the scope of life-course criminology beyond its traditional focus on the role of relationship engagement in the desistance process. And finally, whereas the limited amount of existing criminological studies on this topic relied mostly on register data on offending or relationship engagement, by using survey data, we have information about early relationship engagement (rather than only officially recorded marriages), and direct information on relationship quality during both adolescence and early adulthood.

Method

Participants and Procedure

Data from the RADAR-Y (Research on Adolescent Development and Relationships, younger cohort) study were used. The first six measurement waves cover the period of adolescence of the target participants. Participants in the current study were 497 adolescents, their parents and a sibling, who filled out questionnaires during a home visit. When they entered the first measurement wave, these adolescents were on average about 13 years old (M_{age} = 13.03, SD = 0.46). About 57% of the target participants were boys. When parents had more than two children, they themselves decided which sibling would participate in the study, provided that sibling was old enough to fill out the questionnaires. Of the participating siblings, about 25% was younger than the target adolescent. Mean age of the siblings at times of the first measurement wave was about 15 years old (M_{age} = 14.74, SD = 3.33), and 45% of the siblings were boys. Participating mothers were on average 44 years old (SD = 4.45) and participating fathers were on average 47 years old (SD = 5.10) when their child entered the first measurement wave. The majority of the target adolescents was of Dutch origin according to definitions of Statistics Netherlands (Garssen, Nicolaas, & Sprangers, 2005). At the time of the first measurement wave, most adolescents were living with both biological parents (85.2%). At that time, 28% of the mothers and 15% of the fathers was unemployed or held an elementary job (e.g., construction worker, janitor, or truck driver). In about 11% of the families, both father and mother fit this criterion, and these families were classified as low SES families according to the definition of Statistics Netherlands (Den Boer, 2011). Family SES was coded as medium to high for the other 89% of the families, which according to the definition of Statistics Netherlands implies that at least one of the parents' jobs was classified as medium (e.g., police

officer, physician's assistant) or high level (e.g., doctor, scientist, high school teacher). The seventh measurement took place 2 years after measurement Wave 6, at the time targets were about 20 years old ($M = 19.96$, $SD = 0.46$). This measurement wave was used to cover the early adulthood developmental phase of the target respondents. In this seventh measurement wave, 384 adolescents (about 77%) still participated in the RADAR study. At the time of this seventh measurement wave, 244 respondents (about 63%) reported to have had a romantic relationship at some point in the past years. About 44% of target respondents ($N = 170$) *currently* reported to be in a relationship with a romantic partner, and in 146 of these cases (86%) their romantic partners filled out questionnaires themselves about their antisocial behavior and relationship quality with their partner in the seventh measurement wave. Their romantic partners were about 21 years old ($SD = 2.85$).

Measures

Delinquent or antisocial behavior. Delinquent and antisocial behavior was assessed by means of a 30-item self-report delinquency scale based on the International Self-Report Delinquency Study (Junger-Tas & Terlouw, 1994). The questionnaire was used to assess the *frequency* of the most common offense types (i.e., violent, public order, and property offenses, as well as vandalism) over a time span of 12 months preceding each interview. Example items are "How often in the past year. . . did you purposely damage someone's car/ did you attempt to set a fire." The scale varied from *zero* to *more than 10 times* in the past year. This questionnaire was used to measure delinquent behavior during the course of adolescence (Waves 1-6) and included in the group-based trajectory models (GBTM). The scale was also used as to measure antisocial behavior of the *target respondent* and his or her possible *romantic partner* in early adulthood (Wave 7), which served as an *outcome variable* in early adulthood. Cronbach's alpha of the overall frequency scale varied from .76 to .93 in the six measurement waves during adolescence, and was .86 (for target reports) and .78 (for romantic partner reports) in the seventh measurement wave in early adulthood.

Pubertal maturation. Pubertal maturation was assessed in measurement Waves 1 to 4 by means of the Pubertal Development Scale that was designed to capture pubertal growth. Individuals were asked about body growth, gained body weight, appearance of body hair, and skin changes. Boys were specifically asked about changes in their voices and the growth of facial hair, whereas girls were asked specifically about breast development and menarche. The scale consists of seven items originally answered on a 5-point scale ranging

from (1) *I did not observe any changes* to (5) *changes seem to be complete*. For use in the trajectory analyses, the items were dichotomized to reflect whether this aspect of pubertal growth was met (2-5) or not (1). The seven items were combined into a summed scale (i.e., up to seven) so that higher scores reflected higher levels of pubertal development per wave. This aggregated score was included in the GBTM.

Family conflict. Conflict in personal relationships was measured by means of the negative interaction subscale of the Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985). This subscale consists of six items that reflect hostile behavior as well as (the frequency of) conflicts in personal relationships (for example, "How much do you and your mother/father disagree and quarrel?"). Items were to be answered on a 5-point scale ranging from (1) *not at all* to (5) *a lot*. This scale was used to measure conflicts and negativity in the relationship between the adolescent and both parents, as well as in the relationship with a sibling over the course of adolescence (Waves 1-6). These measures were included in the GBTM. The reliability of this scale was satisfactory, ranging from .88 to .94 for target reports on the relationship with their mothers, ranging from .87 to .93 for target reports on the relationship with their fathers, and ranging from .93 to .94 for target reports on the relationship with their siblings. Scores for relationship quality concerning both parents were averaged.[1]

Partner conflict. In Wave 7, the negative interaction subscale of the NRI was used to measure conflict and negativity in the relationship between the target individual and his or her partner as perceived by the partner. Reliability of this measure in target reports was .91, and .77 for romantic partner reports.

Other variables in adolescence. We had information about the SES of the target individual's family of origin (high/middle or low), and whether the parents in the family of origin were divorced.

Other variables in early adulthood. We also had information on target respondents romantic relationship experience (prior to the seventh measurement wave), (current) early adulthood romantic relationship engagement (i.e., yes/no), and also on the time spent with that partner (i.e., in hours, "yesterday") and perceived financial reliance on parents in early adulthood (i.e., percentage of contribution to total costs of living). Current relationship status (early adulthood) and time spent with partners were included as outcome variables in early adulthood.

Analytical Strategy

We perform GBTM using Stata 11 (StataCorp, 2009) to examine development in our outcome variable with age (Nagin, 2005). Six waves of measures of conflict with parents (NRI), conflict with siblings (NRI), and adolescent delinquency (SRD), as well as four waves of data on pubertal maturation over the course of adolescence were used in the GBTM analyses. Unlike growth curve models that examine the extent to which individuals' development differs from some average developmental pattern, vantage point of GBTM is that clusters of individuals can be identified in the data following different developmental trajectories. Whereas in growth curve modeling the population distribution of developmental trajectories is modeled to follow some continuous distribution function, GBTM uses finite mixture modeling to estimate this unknown continuous distribution in a limited number of discrete groups of individuals whose development follows a similar course. Groups resulting from GBTM can thus best be thought of as latent strata in the longitudinal data (Nagin, 2016).[2] The prevalence of each group is measured by the probability of trajectory group membership. The standard or single trajectory GBTM can be extended to multitrajectory GBTM, which enables the researcher to simultaneously analyze the developmental courses of two or more distinct but related outcomes (Nagin, Jones, Lima Passos, & Tremblay, 2016). In multitrajectory GBTM, each group is defined by its developmental pathway in not one, but multiple outcomes. Like in standard GBTM, these groups can differ in both the level and shape of their developmental pathway. Each outcome variable can also have a different distribution, combining, for example, development in a count variable in one trajectory and a logistic outcome variable in another. Again like in standard GBTM, the prevalence of each group in the data is measured by the probability of group membership these groups now being defined by development in multiple outcomes (Jones & Nagin, 2007).

To determine the optimal number of groups or latent strata to represent the heterogeneity in the data, multitrajectory GBTM varying from one to eight groups were estimated. Selection of the best fitting model was based on the Bayesian information criteria (BIC) and Akaike information criterion (AIC), and entropy.[3] In addition, a series of Wald tests are performed to check whether and how groups differ in terms of their intercepts, slopes, or quadratic slopes on the included variables in the GBTM.

In the next steps of these analyses, we describe differences between groups in terms of background variables (SES, target delinquency) but also in terms of outcome variables (i.e., relationship engagement, time spent with partner, conflict with partner, and partner delinquency). Subsequently, we use the

Table 1. Means and Standard Deviations for Variables Included in the GBTM.[4]

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Delinquency adolescent (frequency)	3.35 (6.69)	2.53 (6.21)	2.85 (6.07)	2.78 (7.72)	1.87 (4.13)	1.84 (5.11)
Conflict adolescent–parent	1.59 (0.48)	1.66 (0.55)	1.71 (0.55)	1.75 (0.56)	1.76 (0.60)	1.72 (0.55)
Conflict adolescent–sibling	2.30 (0.78)	2.21 (0.82)	2.15 (0.82)	2.05 (0.84)	1.94 (0.80)	1.88 (0.76)
Pubertal maturation	4.45 (1.93)	5.67 (1.46)	6.33 (0.98)	6.57 (0.80)	NA	NA

Note. GBTM = group-based trajectory models.

group classifications in a series of regression analyses to predict the features of early adulthood romantic relationship engagement.

Results

GBTM of Adolescent Delinquency, Family Conflict, and Pubertal Maturation

We used six waves of data on target adolescent conflict with parents, conflict with siblings, and self-reported delinquency, as well as four waves of data on self-reported pubertal maturation of target adolescents (Table 1 for descriptive information). With these data, we estimated multitrajectory models for one up to eight groups. As is not uncommon in empirical studies, each time a new group was added BIC and AIC values increased substantially, though a "knee-point" was observed at the five-group model—the Bayes factor approximation dropping from 342.98 for the four- to five-group model, to 151.68 for the five- to six-group model (Table 2). Comparing results for the five- and six-group model revealed that across both models Groups 1 to 4 were highly comparable in both their prevalence and developmental trajectories. The six-group model tended to further disaggregate what was already the smallest group in the five-group model (6.5%), into two even smaller groups (respectively, 5.8% and 3.5%). Adding groups beyond six resulted in even smaller group sizes. As adding more groups did not seem to reveal important patterns in the data, and to safeguard interpretability of the findings, we, therefore, opted for the five-group model. Average posterior probabilities

Table 2. Fit Indices 1 to 8 Group GBTM, Final Model Shaded in Gray.

| Group number	BIC measurements	BIC individuals	AIC	L	BFA[a]
1	−13,658.51	−13,636.3	−13,604.7	−13,589.7	
2	−12,225.99	−12,184.53	−12,125.6	−12,097.6	2,865.04
3	−11,709.03	−11,648.32	−11,562.1	−11,521.1	1,033.92
4	−11,485.19	−11,405.23	−11,291.6	−11,237.6	447.68
5	−11,313.7	−11,214.49	−11,073.5	−11,006.5	342.98
6	−11,237.9	−11,119.4	−10,951.1	−10,871.1	151.68
7	−11,142.02	−11,004.31	−10,808.6	−10,715.6	191.68
8	−11,090.63	−10,933.67	−10,710.6	−10,604.6	102.78

Source. Jones, Nagin, and Roeder (2001).
Note. BIC = Bayesian information criteria; AIC = Akaike information criterion; GBTM = group-based trajectory models, BFA = Bayes Factor Approximation, L = Loglikelihood.
[a]Bayes Factor Approximation (BFA): $2\log(b10) \pm 2(\Delta BIC)$.

for the trajectories in the five-group model were all above .9, and the five-group model also performed well on other indicators of model fit.

Trajectory Group Characteristics

The estimated multitrajectory groups from the five-group model are depicted in Figure 1. Table 3 shows the results from an overall Wald tests of intercepts, slopes, and quadratic slopes across the five groups indicating that groups do not differ in terms of initial levels nor overtime development in pubertal maturation, but do differ in initial levels and overtime development of adolescent delinquency and family conflict.[5] As can be seen in Figure 1, Groups 1 and 2 are characterized by similar *low levels of delinquent behavior* and *low and stable or increasing levels of conflict and negativity* in familial relationships over the course of adolescence, which is confirmed by Wald tests showing that these groups did not differ in terms of delinquency development nor levels of conflict, but showed a somewhat different overtime development of conflict with parents ($\chi^2_{slope} = 14.97, p < .001$; $\chi^2_{quadratic} = 6.75, p < .01$) and siblings ($\chi^2_{slope} = 9.96, p < .01$; $\chi^2_{quadratic} = 9.12, p < .01$). Group 3 is similarly low on family conflict as Group 1 and 2 but is largely characterized by its deviating pattern of delinquency involvement over the course of adolescence. Wald tests indeed show that the initial levels of delinquency are similar to those in Group 1 and 2, but that the overtime development is significantly different from Group 1 ($\chi^2_{slope} = 29.22, p < .001$; $\chi^2_{quadratic} = 14.89, p < .001$)
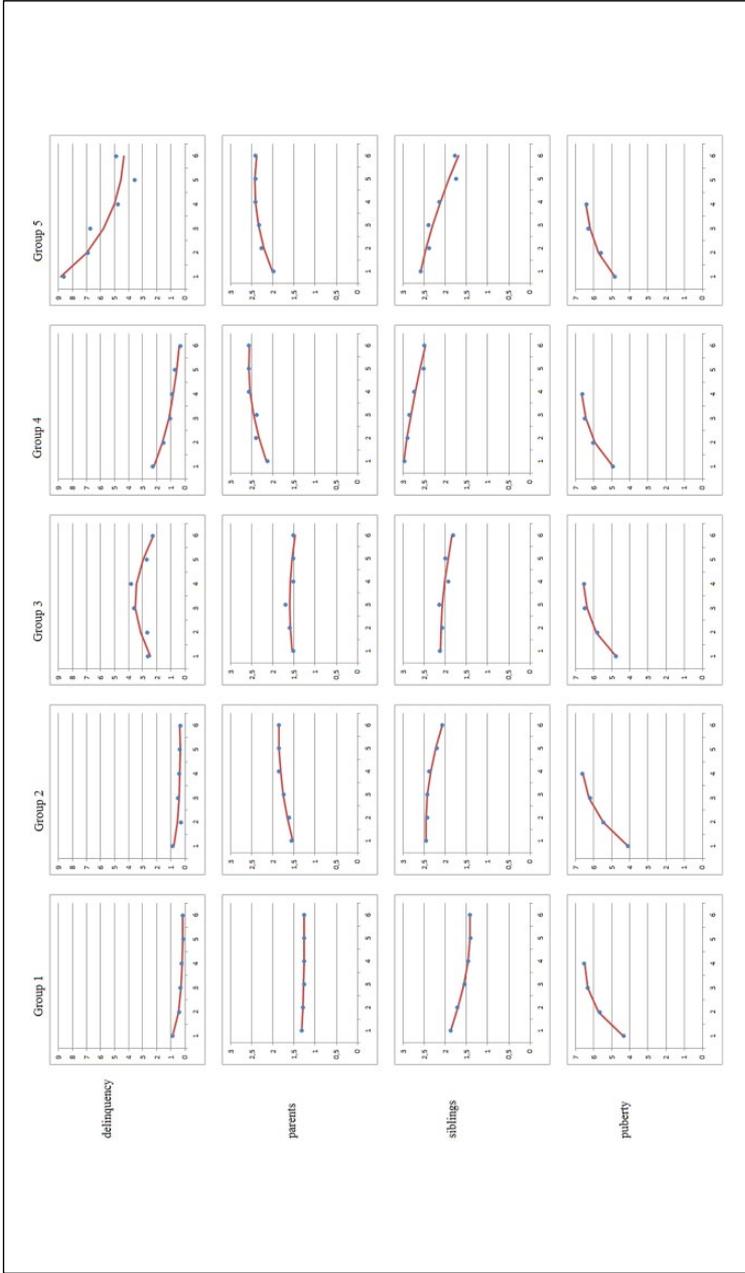
Figure 1. Group classifications based on multitrajectory GBTM of target delinquency, negativity in relationship with parents and siblings, and pubertal development.
Note. GBTM = group-based trajectory models.

Table 3. Overall Wald Tests Testing Differences Between Intercepts, Slopes, and Quadratics Slopes for Variables Included in the GBTM Across Trajectory Groups.

	Wald test (χ^2) Intercepts	Wald test (χ^2) Slopes	Wald test (χ^2) Quadratic slopes
Delinquency adolescent (frequency)	179.29***	60.40***	43.96***
Conflict adolescent–parent	35.83***	26.08***	13.10*
Conflict adolescent–sibling	21.58***	10.38*	9.58*
Pubertal maturation	4.01	2.01	1.94

Note. GBTM = group-based trajectory models.
*$p < .05$. **$p < .01$. ***$p < .001$.

as well as Group 2 ($\chi^2_{slope} = 23.88$, $p < .001$; $\chi^2_{quadratic} = 16.45$, $p < .001$). Respondents in this group show an increase in delinquency during early adolescence, followed by a decrease in late adolescence, which seems to suggest that their delinquency is *adolescent-limited*. Group 4 is characterized by low levels of delinquency over the course of adolescence. Wald tests show that Group 4 has a similar initial level of delinquency as compared with Group 1. Group 4, however, is characterized by *higher levels of conflict and negativity in familial relationships* as compared with Groups 1 to 3. Group 5 stands out in comparison with all of the other groups in the sense that respondents show *higher levels of delinquency* over the course of adolescence as compared with all other groups, next to similarly *high levels of family conflict* as observed in Group 4.

Descriptive Statistics Per Trajectory Group

Tables 4 and 5 provide information on differences in background information of respondents in all five groups—both during adolescence (Waves 1-6), as well as when entering early adulthood (Wave 7). We find that respondents in Group 1 report less experience with romantic relationships compared with the other groups when they enter early adulthood. The gender distribution in Group 3 is not equal: there are significantly more male respondents following this trajectory (which may also explain the specific pattern in delinquency). Moreover, in Group 4, we found relatively more respondents from high/medium SES families than in the other groups. Tables 4 and 5 further show that in early adulthood (Wave 7), the members of the groups did not differ with regard to their religiousness, their financial dependence on parents, and

Table 4. Descriptive Information per Trajectory Group (Categorical Variables).

		Group 1 n = 142	Group 2 n = 172	Group 3 n = 82	Group 4 n = 67	Group 5 n = 32
Gender	Male	74 (52%)	97 (56%)	**59 (72%)**	30 (45%)	23 (72%)
	Female	68 (48%)	77 (44%)	**23 (28%)**	37 (55%)	9 (28%)
SES family (Wave 1)	Medium–high	128 (91%)	159 (93%)	69 (84%)	**54 (81%)**	26 (87%)
	Low	12 (9%)	11 (7%)	13 (16%)	**13 (19%)**	4 (13%)
Divorce of parents (Waves 1-6)	No	88 (80%)	115 (79%)	47 (66%)	39 (71%)	19 (68%)
	Yes	22 (20%)	31 (21%)	24 (34%)	16 (29%)	9 (32%)
Ever romantic relationship (Waves 1-6)	No	**34 (32%)**	21 (16%)	5 (8%)	3 (7%)	4 (17%)
	Yes	**71 (68%)**	113 (84%)	57 (92%)	43 (93%)	20 (83%)
Currently involved in romantic relationships (Wave 7)	No	57 (52%)	81 (58%)	30 (49%)	28 (58%)	18 (69%)
	Yes	53 (48%)	58 (42%)	31 (51%)	20 (42%)	8 (31%)
Religion (Wave 7)	No	66 (60%)	95 (68%)	41 (67%)	33 (69%)	15 (58%)
	Yes	44 (40%)	44 (32%)	20 (33%)	15 (31%)	11 (42%)

Note. Total n (Waves 1-6) = 497, n (Wave 7) = 384, n (Wave 7 with partner) = 170, in bold case are groups that show significantly different distribution of the variable across the five trajectory groups (at $p < .05$ level). SES = socioeconomic status.

according to partner reports, there were also no differences in experienced conflict and negativity in partner relationships. Target respondents in Group 5 did report more antisocial behavior during *early adulthood* as compared with their counterparts in other groups.

Predicting Relationship Engagement in Early Adulthood

Subsequently, we used the group classifications as well as the group probabilities[6] as predictors in a series of multivariate regression analyses to

Table 5. Descriptive Information per Trajectory Group (Continuous Variables).

	Group 1 M (SD)	Group 2 M (SD)	Group 3 M (SD)	Group 4 M (SD)	Group 5 (reference) M (SD)	F (p)
Financial reliance on parents (Wave 7)	3.95 (1.31)	3.90 (1.13)	3.77 (1.41)	3.69 (1.21)	3.62 (1.24)	0.67 (.61)
Relational conflict (Wave 7) target report	**1.20** (0.32)	1.64 (0.63)	1.44 (0.43)	1.59 (0.55)	1.83 (0.69)	6.68 (.00)
Relational conflict (Wave 7) partner report	1.29 (0.31)	1.36 (0.38)	1.32 (0.32)	1.50 (0.42)	1.41 (0.38)	1.27 (.29)
Delinquency (frequency) target (Wave 7)	**0.35** **(1.42)**	**1.04** **(3.72)**	**3.29** **(4.67)**	**1.00** **(2.25)**	6.56 (8.36)	17.98 (.00)
Delinquency (frequency) partner (Wave 7)	**1.63** **(3.04)**	**1.96** **(3.20)**	3.46 (4.86)	2.94 (6.63)	6.67 (6.12)	2.67 (.04)

Note. Total n (Waves 1-6) = 497, n (Wave 7) = 384, n (Wave 7 with partner) = 170, n (Wave 7 received partner surveys) = 152, post hoc tests were performed using Least Significant Differences (LSD) method, Group 5 served as reference category. Bold faced results were significantly different from ref cat.

predict romantic relationship involvement in early adulthood (Wave 7). In all comparisons, Group 5 (i.e., high on delinquency and high on relational conflict) served as a reference group. The distribution of respondents with and without romantic partner seemed largely similar across groups (Table 4). Table 6 shows the results of the regression analyses and reveals that when entering background variables only (Model 1), gender significantly predicted romantic relationship engagement in early adulthood, odds ratio (OR) = 0.55, $p < .01$, indicating that, at the time of Wave 7, female respondents are more often engaged in a romantic relationship. Previous involvement in any romantic relationship also significantly predicted current relationship involvement (OR = 0.04, $p < .05$), indicating that previous relationship experience is significantly related to current relationship status. Other background characteristics, such as SES of the family of origin, divorce of parents, financial dependence on parents, or current religiousness of respondents were not related to current relationship involvement. In Model 2, group classifications were added to the regression model. Although the effects of gender and previous relationship involvement remained significant, there were no clear between-group differences with regard to romantic relationship involvement in early

Table 6. Logistic Regression Predicting Relationship Involvement.

	Model 1				Model 2			
Predictor	B	Wald χ²	p	Odds ratio	B	Wald χ²	p	Odds ratio
Gender (female = reference)	−0.62	5.85	.16	0.54	−0.61	5.27	.02	0.55
SES family (Waves1-6) (low = reference)	0.43	0.89	.35	1.54	0.37	0.47	.44	1.44
Divorce of parents (Waves1-6) (yes = reference)	−0.50	0.02	.89	0.95	−0.50	0.02	.89	0.95
Ever romantic relationship (Waves 1-6) (yes = reference)	−3.11	3.85	.05	0.05	−3.26	4.17	.04	0.04
Financial reliance on parents (Wave 7)	−0.01	0.10	.02	0.90	0.01	0.002	.96	1.01
Religion (Wave 7) (no = reference)	−0.17	0.44	.51	0.85	−0.20	0.58	.82	0.82
Trajectory groups								
1 (vs. 5)					1.15	3.77	.052	3.16
2 (vs. 5)					0.76	1.71	.19	2.13
3 (vs. 5)					0.88	2.08	.15	2.42
4 (vs. 5)					0.30	0.22	.64	1.35

Note. N (Wave 7) = 384, Nagelkerke R^2 (Model 1) = .15, Nagelkerke R^2 (Model 2) = .18. SES = socioeconomic status.

adulthood. The interaction effect for gender and previous relationship involvement was not significant and was, therefore, not included in the final model.

Predicting Partner Selection in Early Adulthood—Partners in Crime?

Our next step was to use the group classifications to predict current partner antisocial behavior for those respondents involved in a romantic relationship (Table 7). We first included the same set of background variables (Model 1)—and we found that the SES of the family of origin was related to partner antisocial behavior ($\beta = .21$, $p < .01$). Apparently, respondents with a lower

Table 7. Multivariate Regression Predicting Partner Antisocial Behavior.

	Model 1		Model 2	
Predictor	β	p	β	p
Gender (0 = male)	.08	.32	.14	.09
SES family (Waves 1-6) (0 = medium/high)	.21	.01	.21	.01
Divorce of parents (Waves 1-6) (0 = no)	.14	.10	.10	.21
Financial reliance on parents (Wave 7)	−.01	.97	−.01	.97
Religion (Wave 7) (0 = no)	.04	.59	.001	.98
Trajectory groups				
1 (vs. 5)			−.65	.003
2 (vs. 5)			−.64	.004
3 (vs. 5)			−.36	.04
4 (vs. 5)			−.42	.01

Note. N (Wave 7, partner reports) = 146, R^2 (Model 1) = .09, / R^2 (Model 2) = .16, ΔR^2 = .07, F = 2.97, p < .05. SES = socioeconomic status.

SES background generally have partners that are more antisocial. None of the other included background variables (gender, financial dependence, parental divorce) had a significant relationship with partner antisocial behavior. When adding the group classifications to the model (Model 2), the effect of SES remained significant (Table 7). Furthermore, we found that the respondents of all other groups (i.e., Groups 1-4) had partners that were *less* antisocial as compared with the partners of member of Group 5 (β = −.65, p < .01; β = −.64, p < .01; β = −.36, p < .05; β = −.42, p < .05). This means that apparently, members of Group 5 (i.e., high on delinquent behavior, high on relationship negativity) tend to have, chose, or fall for, antisocial partners.

Predicting Relationship Content in Early Adulthood—Time Spent Together

Relationship content was reflected by the number of hours the partners spent together the day before the survey took place (Table 8). Neither the background variables, nor the group classifications showed any relationship with the time partners spent together.

Table 8. Multivariate Regression Predicting Relationship Content: Time Spent With Partner (Hours, Yesterday).

	Model 1		Model 2	
Predictor	β	p	β	p
Gender (0 = male)	.04	.64	.02	.78
SES family (Waves1-6) (0 = medium/high)	−.08	.33	−.09	.29
Divorce of parents (Waves1-6) (0 = no)	.13	.14	.13	.15
Financial reliance on parents (Wave 7)	−.02	.79	−.01	.87
Religion (Wave 7) (0 = no)	.001	.98	.01	.89
Trajectory groups				
1 (vs. 5)			.21	.28
2 (vs. 5)			.21	.28
3 (vs. 5)			.19	.26
4 (vs. 5)			.19	.19

Note. N (Wave 7, targets with partners) = 170, R^2 (Model 1) = .02, / R^2 (Model 2) = .03, ΔR^2 = .01, F = 0.45, *ns*. SES = socioeconomic status.

Predicting Relationship Quality in Early Adulthood—Conflict and Negativity

In the final step, we used a comparable model to relate group classifications to the experienced relationship quality. Table 9 shows that none of the background variables (i.e., gender, SES, divorce, financial dependence) were significantly related to perceived conflict in the current relationship with a romantic partner (Model 1). When adding the group classifications to the model (Model 2), the effects of the background variables did not change. What the models did show was that members of Group 1 (as compared with members of Group 5) reported *less* relational conflict in their romantic relationships ($\beta = -.56$, $p < .01$). No differences were observed in comparisons with the other groups. Group 5 differs from Group 1 in both levels of delinquency and relational conflict with family members. To examine whether levels of family conflict or rather delinquency were driving differences in relational negativity in respondents' current romantic relationship, we repeated the above analysis with Group 4 as the reference group. Like Group 5, Group 4 is characterized by high levels of family conflict, but unlike Group 5, delinquency levels are similar to Group 1. In this model, Group 5 does not

Table 9. Multivariate Regression Predicting Partner Relationship Quality (Conflict).

Predictor	Model 1		Model 2	
	β	p	β	p
Gender (0 = male)	.01	.87	.02	.81
SES family (Waves 1-6) (0 = medium/high)	.01	.87	.01	.93
Divorce of parents (Waves 1-6) (0 = no)	.06	.60	.02	.77
Financial reliance on parents (Wave 7)	.04	.70	−.03	.65
Religion (Wave 7) (0 = no)	−.03	.47	.05	.50
Trajectory groups				
1 (vs. 5)			−.56	<.01
2 (vs. 5)			−.19	.31
3 (vs. 5)			−.30	.06
4 (vs. 5)			−.17	.22

Note. N (Wave 7, with partner) = 170, R^2 (Model 1) = .01, R^2 (Model 2) = .15, ΔR^2 = .14, F = 2.98, p < .01. SES = socioeconomic status.

differ from Group 4, but Group 1 does, indicating that respondents categorized under Group 1 reported significantly less conflict and negativity in their relationship with their partners compared with Group 4.

Discussion

Although hardly studied, the scant available evidence suggests there to be adverse effects of criminal—or antisocial and criminal behavior on important life-course transitions such as marriage, parenthood, and relationship quality (e.g., Huschek & Blokland, 2016; Schoon & Mullin, 2016; Thornberry et al., 2016). The aim of the current study was to investigate the associations between overtime patterns of adolescent delinquency, relational conflict with parents and siblings, and pubertal maturation on one hand, and characteristics of early adulthood romantic relationship engagement on the other hand.

We used GBTM (Jones & Nagin, 2007) to distinguish between individuals based on their developmental patterns of respondents' experienced relational conflict with both parents and siblings, their developmental patterns of pubertal maturation, as well as respondent's delinquency over the course of

adolescence. The five groups that we distinguished differed mostly on the presence and development of delinquent behavior and conflict in relationships with parents and siblings. The groups did not differ in terms of levels nor overtime change in pubertal development. Although there are indications that still many important bodily and hormonal changes take place around the age of 13 years (e.g., Granic & Patterson, 2006; Marceau, Ram, & Susman, 2015), our sample might already have been too old to capture *early* pubertal development, which according to the literature has most often been associated with antisocial behavior and problematic family functioning (e.g., Dimler & Natsuaki, 2015).

The smallest but most distinct and problematic group was characterized by high levels of delinquency on top of high levels of family conflict. The individuals in this group were more often still offending in early adulthood as compared with members of the other groups. On the other end of the spectrum, there is a considerably larger "well-behaved" group characterized by low levels of conflict and delinquency. Previous studies have repeatedly found associations between relational conflict with parents or siblings and delinquency (Collins, 2003; Collins & Steinberg, 2006), therefore, this result was not completely unexpected.

Collins' (2003) five feature framework was used to operationalize early adults' romantic involvement, including relationship status, partner selection, relationship content, and quality. The group classifications were hardly related to relationship engagement: Gender was a way better predictor, in the sense that females were more often involved in relationships than males. This is in line with literature that states that girls are often engaged in romantic relationships that are more serious or caring, earlier than boys (e.g., Shulman & Scharf, 2000), but the findings are also in line with results of Thornberry et al.'s (2016) study that—in contrast to what was expected based on interactional theory—adolescent risk behavior was not related to partner formation. Based on earlier research, however, group classification may potentially predict the timing of other aspects of relationships, such as parenthood, when these individuals get older (Huschek & Blokland, 2016; Schoon & Mullin, 2016).

Among those who were engaged in a romantic relationship, group classifications were valuable predictors of persistent antisocial behavior in early adulthood, partner characteristics (i.e., delinquency), and relationship quality (i.e., conflict). Individuals from lower SES families more often had delinquent partners, but also the group characterized by high levels of delinquency on top of high levels of family conflict during adolescence (Group 5) was the group in which individuals had the most antisocial partners later in life. Given the fact that *all other groups* differed from the respondents in this highly delinquent and conflict group, including the group characterized by similarly

high levels of relational conflict but low on delinquency, our results suggest that especially *adolescent delinquency* may be predictive of *partner antisocial behavior* in early adulthood. Our finding that delinquent adolescents are partnering antisocial spouses is in line with prior research and theory on assortative mating (van de Weijer & Beaver, 2017) and may be—by lowering the impact of spousal bonds on criminal development—implicated in persistence in crime (Sampson & Laub, 2003). Our results furthermore indicate that conflict with parents and siblings over the course of adolescence is related to conflict in partner relationships later in life.[7] Here, our results seem to be in line with social learning theorists arguing that later romantic relationship quality benefits specifically from healthy early relationship experiences and socialization potentially through social learning (Linder & Collins, 2005). Reinforcement and social learning of problematic interactions in childhood and adolescence may cause replication of such behavior in relationships with important others during adulthood (Rhule-Louie & McMahon, 2007). From negative interactions with their parents and siblings children may internalize aggressive, conflict-prone or violent attitudes, which may be internalized by adolescents growing up in these families. These attitudes and learned behaviors shape the way individuals engage in social relationships during adulthood (Conger et al., 2000).

Against our expectations and not fully in line with ideas posited in life-course theory, neither divorce in the family of origin (Amato & Booth, 2001; Seiffge-Krenke et al., 2001) nor financial dependence on parents predicted relationship status, quality, or partner characteristics. None of the included background variables, nor the group classification from the trajectory models predicted the time spent with the partner. One of the explanations might be that in our relatively young sample most individuals with a partner did not (yet) live with that partner and potentially, therefore, the largest part of our sample indicated not to spend much time with them.

Limitations and Strengths

Some limitations need to be mentioned. First, the families of the initial sample were relatively well-functioning and mostly intact families, which indicates that the present study captured differences in normal adolescent development. However, it may also be that growing up in highly problematic or disturbed families has more or other consequences for early adulthood relationships. The fact that we still found numerous differences between groups may imply that with truly problematic families the differences may even be more distinct. Second, the respondents were still in the very early stages of adulthood, which is the reason why the largest part of the sample did not yet have a partner, and

if they had, their relationships seem to be somewhat immature. Future research will show whether adolescent developmental patterns of relationship quality and delinquency will affect the timing and nature of *serious and persisting* partner relationships, or, for example, the timing of *parenthood*. Similarly, it may be that the effects of parental divorce in the family of origin, or financial dependence on a later age, will affect partner relationships at a later stage in (early) adulthood. According to some studies, in present day cohorts age 30 signals a stage in adulthood where major investments in partner choice and family formation are made (e.g., Arnett, 2000), which means that we simply have to wait for this sample to mature to test our ideas again. The fact, however, that we found significant differences in the relationship outcomes across groups, indicates that differences may already become visible at earlier stages of adulthood as well.

Concluding Remarks

Early adult romantic relationships are multifaceted phenomena of which distinct features have developmental precursors in different life-course domains. As these life-course domains are intrinsically linked, simultaneous study is warranted. Various disciplines may inform expectations on these different relationship features, underlining the multidisciplinary character of the life-course approach. The predictors are generally domain-specific: We find that conflict-ridden family relationships seem to foreshadow strained romantic relationships in the early adult years, whereas adolescent delinquency—and not family conflict—seems to be the stronger predictor of partnering an antisocial spouse. As high-quality romantic relationships facilitate desistance from crime, the current findings suggest that persistence in antisocial behavior in the adult years may be partly contributed to both the nature of adolescent family relations and the extent of adolescent delinquency.

Declaration of Conflicting Interests

Funding

Notes

1. In multitrajectory GBTM, each trajectory group is defined by a combination of trajectories in each of the different outcomes included in the analysis (see below). Each additional outcome increases model complexity, both computationally and conceptually.
2. The assumption that the population is composed of multiple distinct groups is likely not literary correct, but rather help reduce the complexity of developmental data and make it more comprehensible (Brame, Paternoster, & Piquero, 2012; Nagin & Odgers, 2010).
3. Additional criteria mentioned by Nagin (Nagin & Tremblay, 2005)—close correspondence between the estimated group prevalence and the prevalence based on the maximum posterior probability assignment rule; a minimum average posterior probability of .7 for each trajectory group; odds of correct classification based on the posterior probabilities of group membership should be five or over; reasonably tight confidence intervals around estimated group probabilities—to assess model adequacy were also taken into account. Still, like in any latent class model, informed judgment remains pivotal in balancing parsimony and statistical accuracy in summarizing distinctive features of the longitudinal data available.
4. Means and standard deviations of all variables *per trajectory group* are available upon request from corresponding author.
5. We also performed a series of pairwise Wald tests to see which groups actually differ and on which GBTM variables, which we use to describe the groups here. Upon request, these tables can be obtained from the first author.
6. We present here the results of multivariate regression analyses with group classifications, however, it should be noted that similar results were obtained using the group probabilities.
7. In the analyses, we present results with Group 5 as the reference group. When we expect that mostly lower levels of relational conflict with family members during adolescence are predictive of lower levels of relational conflict in romantic relationships in adulthood, we would expect that at least Groups 4 and 5 would not differ in terms of later partner conflict. An additional repetition of the analyses with Group 4 as the reference group indeed confirms this: Groups 4 and 5 do not differ. However, Group 4 differs from Group 1, the so called "low on conflict group."

References

Amato, P. R., & Booth, A. (2001). The legacy of parents' marital discord: Consequences for children's marital quality. *Journal of Personality and Social Psychology*, *81*, 627-638. doi:10.1037//0022-3514.81.4.627

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American psychologist*, *55*, 469-480. doi: 0.1037/0003-066X.55.5.469

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191-215. doi:10.1037/0033-295X.84.2.191

Brame, R., Paternoster, R., & Piquero, A. R. (2012). Thoughts on the analysis of group-based developmental trajectories in criminology. *Justice Quarterly*, *29*(4), 469-490. doi: 10.1080/07418825.2011.585994

Beaver, K. M., & Wright, J. P. (2005). Evaluating the effects of birth complications on low self-control in a sample of twins. *International Journal of Offender Therapy and Comparative Criminology*, *49*, 450-471. doi:10.1177/0306624X05274687

Belsky, J., Steinberg, L. D., Houts, R. M., Friedman, S. L., DeHart, G., Cauffman, E.,. . . NICHD Early Child Care Research Network. (2007). Family rearing antecedents of pubertal timing. *Child Development*, *78*, 1302-1321. doi:10.1111/j.1467-8624.2007.01067.x

Blokland, A. A., & Nieuwbeerta, P. (2010). Life course criminology. In: Shlomo, G. S., Knepper, P. and Kett, M. (Eds). *International Handbook of Criminology* (pp. 51-94). Boca Raton, FL: CRC Press.

Boisvert, S., & Poulin, F. (2016). Romantic relationship patterns from adolescence to emerging adulthood: Associations with family and peer experiences in early adolescence. *Journal of Youth and Adolescence*, *45*, 945-958. doi:10.1007/s10964-016-0435-0

Boutwell, B. B., Beaver, K. M., & Barnes, J. C. (2012). More alike than different: Assortative mating and antisocial propensity in adulthood. *Criminal Justice and Behavior*, *39*, 1240-1254. doi:10.1177/0093854812445715

Buist, K. L., Paalman, C. H., Branje, S. J., Deković, M., Reitz, E., Verhoeven, M., . . . Hale, W. W., III. (2015). Longitudinale effecten van kwaliteit van de broer/zusrelatie op probleemgedrag van adolescenten: Een cross-etnische vergelijking [Longitudinal effects of sibling relationship quality on adolescent problem behavior: A cross-ethnic comparison]. *Kind & Adolescent*, *36*, 63-85. doi:10.1007/s12453-015-0076-1

Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, *13*, 1-24. doi:10.1111/1532-7795.1301001

Collins, W. A., & Steinberg, L. (2006). Adolescent development in interpersonal context. In W. Damon & R. Lerner (Eds.) & N. Eisenberg (Vol. Ed.), *Social, emotional, and personality development. Handbook of Child Psychology* (pp. 1003-1067). New York , NY: Wiley.

Conger, R. D., Cui, M., Bryant, C. M., & Elder, G. H. (2000). Competence in early adult romantic relationships: A developmental perspective on family influences. *Journal of Personality and Social Psychology*, *79*, 224-237. doi:10.1037//0022-3514.79.2.224

Craig, J. M., Diamond, B., Piquero, A. R. (2014) *Marriage as an intervention in the lives of criminal offenders*. In: Humphrey, J. A., Cordella, P. (eds) *Effective interventions in the lives of criminal offenders* (pp. 19-40), New York, NY: Springer.

Crockett, L. J., Bingham, C. R., Chopak, J. S., & Vicary, J. R. (1996). Timing of first sexual intercourse: The role of social control, social learning, and problem behavior. *Journal of Youth and Adolescence*, *25*, 89-111. doi:10.1007/BF01537382

Cui, M., & Fincham, F. D. (2010). The differential effects of parental divorce and marital conflict on young adult romantic relationships. *Personal Relationships*, *17*, 331-343. doi:10.1111/j.1475-6811.2010.01279.x

Den Boer, P. (2011). Tijdreeksen werkzame beroepsbevolking naar beroepsprestige, sociaal-economische status en sociale klasse. Den Haag: Centraal Bureau voor de Statistiek [Statistics Netherlands].

DeGoede, I. H., Branje, S., van Duin, J., VanderValk, I. E., & Meeus, W. (2012). Romantic relationship commitment and its linkages with commitment to parents and friends during adolescence. *Social Development*, *21*, 425-442. doi:10.1111/j.1467-9507.2011.00633.x

Dekovic, M., Buist, K. L., & Reitz, E. (2004). Stability and changes in problem behavior during adolescence: Latent growth analysis. *Journal of Youth and Adolescence*, *33*, 1-12. doi:10.1023/A:1027305312204

Dimler, L. M., & Natsuaki, M. N. (2015). The effects of pubertal timing on externalizing behaviors in adolescence and early adulthood: A meta-analytic review. *Journal of Adolescence*, *45*, 160-170. doi:10.1016/j.adolescence.2015.07.021

Dirks, M. A., Persram, R., Recchia, H. E., & Howe, N. (2015). Sibling relationships as sources of risk and resilience in the development and maintenance of internalizing and externalizing problems during childhood and adolescence. *Clinical Psychology Review*, *42*, 145-155. doi:10.1016/j.cpr.2015.07.003

Dunn, J. (2015). Siblings. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 182-201). New York, NY: Guilford Press.

Elder, G. H. (1998). The life course as developmental theory. *Child Development*, *69*, 1-12. doi:10.1111/j.1467-8624.1998.tb06128.x

Ellis, B. J., McFadyen-Ketchum, S., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1999). Quality of early family relationships and individual differences in the timing of pubertal maturation in girls: A longitudinal test of an evolutionary model. *Journal of Personality and Social Psychology*, *77*, 387-401.

Felson, R. B., & Haynie, D. L. (2002). Pubertal development, social factors, and delinquency among adolescent boys. *Criminology*, *40*, 967-988. doi:10.1111/j.1745-9125.2002.tb00979.x

Fergusson, D. M., John Horwood, L., & Ridder, E. M. (2005). Show me the child at seven: The consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry*, *46*, 837-849. doi:10.1111/j.1469-7610.2004.00387.x

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology*, *21*, 1016-1024.

Garssen, J., Nicolaas, H., & Sprangers, A. (2005). Demografie van de allochtonen in Nederland. *CBS Bevolkingstrends*, *53*(3), 96-117.

Giordano, P. C., Lonardo, R. A., Manning, W. D., & Longmore, M. A. (2010). Adolescent romance and delinquency: A further exploration of Hirschi's "cold and brittle" relationships hypothesis. *Criminology*, *48*, 919-946. doi:10.1111/j.1745-9125.2010.00208.x

Granic, I., & Patterson, G. R. (2006). Toward a comprehensive model of antisocial development: A dynamic systems approach. *Psychological Review*, *113*, 101-131. doi:10.1037/0033-295X.113.1.101

Harden, K. P., & Mendle, J. (2012). Gene-environment interplay in the association between pubertal timing and delinquency in adolescent girls. *Journal of Abnormal Psychology*, *121*, 73-87. doi:10.1037/a0024160

Haynie, D. L., Giordano, P. C., Manning, W. D., & Longmore, M. A. (2005). Adolescent romantic relationships and delinquency involvement. *Criminology*, *43*, 177-210. doi:10.1111/j.0011-1348.2005.00006.x

Huizinga, D., Loeber, R., & Thornberry, T. P. (1993). Longitudinal study of delinquency, drug use, sexual activity, and pregnancy among children and youth in three cities. *Public Health Reports*, *108*(Suppl. 1), 90-96.

Huschek, D., & Blokland, A. (2016). Crime and parenthood: Age and gender differences in the association between criminal careers and parenthood. *Advances in Life Course Research*, *28*, 65-80. doi:10.1016/j.alcr.2015.09.006

Jones, B. L., & Nagin, D. S. (2007). Advances in group-based trajectory modeling and an SAS procedure for estimating them. *Sociological Methods & Research*, *35*, 542-571. doi:10.1177/0049124106292364

Jones, B. L., Nagin, D. S., & Roeder, K. (2001). A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research*, *29*, 374-393.

Junger-Tas, J., & Terlouw, G.-J. (1994). *Delinquent behavior among young people in the western world: First results of the international self-report delinquency study*. New York, NY: Kugler Publications.

Kim, J. E., Hetherington, E. M., & Reiss, D. (1999). Associations among family relationships, antisocial peers, and adolescents' externalizing behaviors: Gender and family type differences. *Child Development*, *70*, 1209-1230. doi:10.1111/1467-8624.00088

Kim, K. J., Conger, R. D., Lorenz, F. O., & Elder, G. H., Jr. (2001). Parent–adolescent reciprocity in negative affect and its relation to early adult social development. *Developmental Psychology*, *37*, 775-790. doi:10.1037//0012-1649.37.6.775

Krueger, R. F., Moffitt, T. E., Caspi, A., Bleske, A., & Silva, P. A. (1998). Assortative mating for antisocial behavior: Developmental and methodological implications. *Behavior Genetics*, *28*, 173-186. doi:10.1023/A:1021419013124

Laursen, B., & Bukowski, W. M. (1997). A developmental guide to the organisation of close relationships. *International Journal of Behavioral Development*, *21*, 747-770. doi:10.1080/016502597384659

Linder, J. R., & Collins, W. A. (2005). Parent and peer predictors of physical aggression and conflict management in romantic relationships in early adulthood. *Journal of Family Psychology*, *19*, 252-262. doi:10.1037/0893-3200.19.2.252

Marceau, K., Ram, N., Houts, R. M., Grimm, K. J., & Susman, E. J. (2011). Individual differences in boys' and girls' timing and tempo of puberty: Modeling development with nonlinear growth models. *Developmental Psychology*, *47*, 1389-1409. doi:10.1037/a0023838

Marceau, K., Ram, N., & Susman, E. J. (2015). Development and lability in the par-ent–child relationship during adolescence: Associations with pubertal timing and tempo. *Journal of Research on Adolescence*, *25*(3), 474-489. doi: 10.1111/jora.12139

McLeod, J. D., & Almazan, E. P. (2003). *Handbook of the life course*. New York, NY: Kluwer Academic/Plenum Press.

Meeus, W. H. (2016). Adolescent psychosocial development: A review of longitudinal models and research. *Developmental Psychology*, *52*, 1969-1993. doi:10.1037/dev0000243

Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course per-sistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*, *13*, 355-375. doi:10.1017/S0954579401002097

Nagin, D. S. (2005). *Group-based modeling of development*. Cambridge, MA: Harvard University Press.

Nagin, D. S. (2016). Group-based trajectory modeling and criminal career research. *Journal of Research in Crime and Delinquency*, *53*, 356-371. doi:10.1177/0022427815611710

Nagin, D. S., Jones, B. L., Lima Passos, V., & Tremblay, R. E. (2016). Group-based multi-trajectory modeling. *Statistical Methods in Medical Research*, *27*, 2015-2023. doi:10.1177/0962280216673085

Nagin, D. S., & Odgers, C. L. (2010). Group-based trajectory modeling (nearly) two decades later. *Journal of quantitative criminology*, *26*(4), 445-453. doi: 10.1007/s10940-010-9113-7

Nagin, D. S., & Tremblay, R. E. (2005). Developmental trajectory groups: Fact or a useful statistical fiction? *Criminology*, *43*, 873-904. doi: 10.1111/j.1745-9125.2005.00026.x

Negriff, S., & Susman, E. J. (2011). Pubertal timing, depression, and externalizing problems: A framework, review, and examination of gender differences. *Journal of Research on Adolescence*, *21*, 717-746. doi:10.1111/j.1532-7795.2010.00708.x

Patterson, G. R. (1984). Siblings: Fellow travelers in coercive family processes. In R. J. Blanchard & D. C. Blanchard (Eds.), *Advances in the study of aggression* (Vol. 1, pp. 173-215). Orlando, FL: Academic Press.

Raudino, A., Woodward, L. J., Fergusson, D. M., & Horwood, L. J. (2012). Childhood conduct problems are associated with increased partnership and parenting dif-ficulties in adulthood. *Journal of Abnormal Child Psychology*, *40*, 251-263. doi:10.1007/s10802-011-9565-8

Reese, B. M., Trinh, S. L., & Halpern, C. T. (2017). Implications of pubertal tim-ing for romantic relationship quality among heterosexual and sexual minority young adults. *Journal of Adolescent Health*, *61*, 685-693. doi:10.1016/j.jado-health.2017.06.010

Rhule-Louie, D. M., & McMahon, R. J. (2007). Problem behavior and romantic rela-tionships: Assortative mating, behavior contagion, and desistance. *Clinical Child and Family Psychology Review*, *10*, 53-100. doi:10.1007/s10567-006-0016-y

Rodkin, P. C., Farmer, T. W., Pearl, R., & Van Acker, R. (2000). Heterogeneity of pop-ular boys: Antisocial and prosocial configurations. *Developmental Psychology*, *36*, 14-24. doi:10.1037/0012-1649.36.1.14

Sampson, R. J., & Laub, J. H. (2003). Life-course desisters? Trajectories of crime among delinquent boys followed to age 70. *Criminology*, *41*, 555-592. doi:10.1111/j.1745-9125.2003.tb00997.x

Sampson, R. J. (1993) & Laub, J. H. Turning points in the life course: Why change matters to the study of crime. *Criminology*, 31, 301-325. doi:10.1111/j.1745-9125.1993.tb01132.x

Schoon, I., & Mullin, A. J. (2016). Crime involvement and family formation: Evidence from the British birth cohort study. *Advances in Life Course Research*, *28*, 22-30. doi:10.1016/j.alcr.2016.03.003

Seiffge-Krenke, I., Overbeek, G., & Vermulst, A. (2010). Parent–child relationship trajectories during adolescence: Longitudinal associations with romantic outcomes in emerging adulthood. *Journal of Adolescence*, *33*, 159-171. doi:10.1016/j.adolescence.2009.04.001

Seiffge-Krenke, I., Shulman, S., & Kiessinger, N. (2001). Adolescent precursors of romantic relationships in young adulthood. *Journal of Social and Personal Relationships*, *18*, 327-346. doi:10.1177/0265407501183002

Shulman, S., & Scharf, M. (2000). Adolescent romantic behaviors and perceptions: Age- and gender-related differences, and links with family and peer relationships. *Journal of Research on Adolescence*, *10*, 99-118. doi:10.1207/SJRA1001_5

Simons, R. L., & Barr, A. B. (2014). Shifting perspectives: Cognitive changes mediate the impact of romantic relationships on desistance from crime. *Justice Quarterly*, *31*, 793-821. doi:10.1080/07418825.2012.704388

Staats, S., van der Valk, I. E., Meeus, W. H., & Branje, S. J. (2018). *Longitudinal transmission of conflict management styles across inter-parental and adolescent relationships*. *Journal of Research on Adolescence*, *28*, 169-185. doi: 10.1111/jora.12324

StataCorp. (2009). Stata statistical Software (Version Release 11). College Station, TX: StataCorp LP.

Thornberry, T. P. (2014). *Interactional theory of delinquency*. In: G. Bruinsma & D. Weisburd (Eds.), Encyclopedia of criminology and criminal justice (pp. 2592-2601). New York, NY: Springer.

Thornberry, T. P., Krohn, M. D., Augustyn, M. B., Buchanan, M., & Greenman, S. J. (2016). The impact of adolescent risk behavior on partner relationships. *Advances in Life Course Research*, *28*, 6-21. doi:10.1016/j.alcr.2015.04.002

van de Bongardt, D., Yu, R., Deković, M., & Meeus, W. H. (2015). Romantic relationships and sexuality in adolescence and young adulthood: The role of parents, peers, and partners. *European Journal of Developmental Psychology*, *12*, 497-515. doi:10.1080/17405629.2015.1068689

van de Weijer, S. G., & Beaver, K. M. (2017). An exploration of mate similarity for criminal offending behaviors: Results from a multi-generation sample of Dutch spouses. *Psychiatric Quarterly*, *88*, 523-533. doi:10.1007/s11126-016-9465-8

van Schellen, M., Poortman, A.-R., & Nieuwbeerta, P. (2011). Partners in crime? Criminal offending, marriage formation, and partner selection. *Journal of Research in Crime and Delinquency*, *49*, 545-571. doi:10.1177/0022427811414197

Whiteman, S. D., McHale, S. M., & Soli, A. (2011). Theoretical perspectives on sibling relationships. *Journal of Family Theory & Review*, *3*, 124-139. doi:10.1111/j.1756-2589.2011.00087.x

Author Biographies

Veroni I. Eichelsheim is a senior researcher at the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR). Her research interest includes the development of family relationship quality, parenting, and delinquency over the life-course and across generations.

Arjan Blokland is a senior researcher at the NSCR and a professor of criminology and criminal justice at Leiden University. His current research focuses on developmental and life-course features of criminal behavior.

Wim H. J. Meeus is a professor of adolescent development at Utrecht University and of developmental psychology at Tilburg University. His research interests are personal and social development in adolescence.

Susan J. T. Branje is a professor of adolescent development and socialization at Utrecht University. Her research interests are on understanding the developmental changes in adolescents' relationships with parents, siblings, friends, and romantic partners and the associations with development of adolescent adjustment.